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Section for the Study of Disease in Children.

[May 30, 1930, continued.]

Tracheotomy for Laryngeal Diphtheria in 1926 and 1930 on the Same Child.—J. D. ROLLESTON, M.D.

The patient, a boy aged 6 years, shows a longitudinal pigmented scar over the trachea, $\frac{1}{2}$ in. long by $\frac{1}{8}$ in. wide, with the remains of a pale scar at its periphery.

He was admitted to the Western Hospital, on May 8, 1926, on account of laryngeal diphtheria; 20,000 units of antitoxin were given and tracheotomy was performed shortly after admission. The throat was clean, but a culture of diphtheria bacilli was obtained from the trachea. Considerable difficulty was experienced in dispensing with the tube, which was finally removed on June 6. Otherwise, apart from a generalized serum rash on May 19, and a trace of albumin in the urine on May 23, recovery was uneventful and the child was discharged on June 26, 1926. A year later he had his tonsils and adenoids removed, and in March, 1928, contracted measles, but otherwise remained in good health until January 14, 1930, when he had a second attack of diphtheria which, on this occasion, was both faucial and laryngeal. He was readmitted to the Western Hospital, January 16, and tracheotomy was performed the following day. As on the first occasion, recovery was uncomplicated—apart from a trace of albumin in the urine for a few days, and a generalized serum eruption—and he was discharged in good health, February 22, 1930.

Discussion.—Dr. J. D. ROLLESTON said that repeated tracheotomy on the same patient for laryngeal diphtheria was a very rare occurrence, and had received little attention in the literature. In pre-antitoxin times Sanné¹, while admitting its rarity, stated that the occurrence was not so grave as might have been expected, as out of five cases reported by Millard, only one had been fatal. He added that the second operation might even be facilitated by the cicatricial band uniting the skin to the trachea serving as a guide (such a band had not been formed in the present case). Since the introduction of antitoxin, Baginsky, in his well-known monograph, had alluded to repeated tracheotomy on the same subject and had emphasized its rarity.²

Several Members had asked him (Dr. Rolleston) about the occurrence of more than one attack of diphtheria. For many years he had kept notes of all his cases of diphtheria, until he had 3,000. In forty of these, or 1.3%, there had been relapses of diphtheria while the patients were still in hospital, but in none of them were both the primary attack and the relapse laryngeal; though in some cases the primary attack was faucial and the relapse laryngeal, or vice versa. Another sixty-seven, or 2.2%, gave a history of having had a previous attack of diphtheria from three months to fourteen years previously, but in no case had the larynx been attacked on both occasions.

Occasionally a return of laryngeal symptoms might take place during serum sickness, and Rocaz and Carles³ had reported some cases where this recurrence had necessitated re-intubation. In none of the cases of this kind, however, which he (Dr. Rolleston) had seen, had the symptoms been sufficiently urgent to require a second tracheotomy.

Dr. E. STOLKIND said that he remembered a boy who had undergone tracheotomy twice on account of diphtheria. He had recovered from the first attack when he was 5 years old. When he had the second attack his father objected to the suggestion that tracheotomy should be performed again, but the child had begged for it, and it was carried out, and the boy again recovered.

Dr. W. M. FELDMAN said he had understood Dr. Rolleston to say that in 3,000 cases of diphtheria the number who had had two attacks was 1% and that 4% had had diphtheria before they came into hospital, making a total of 5% of cases of double diphtheria in a

¹ Sanné, A., "Traité de la Diphthérie," 1877, 486.

² Diphtherie und diphtheritischer Croup, 2 Auflage, 1913, 293.

³ Gaz. hebdom. Sci. méd. de Bordeaux, 1909, xxxi, 279.

patient. If that was so, then, in view of the fact that only a comparatively small proportion of children actually suffered from diphtheria, the probability of the same children having a second attack—even if the first attack conferred no immunity—would necessarily be very much smaller still, and might conceivably be no more than the 5% of Dr. Rolleston's statistics. The question was thus raised whether diphtheria conferred a permanent immunity at all. It would be of interest if a competent statistician would examine diphtheria statistics in that light, as it was just possible that people did not have a second attack of diphtheria for the same reason that there were very few—if any—persons who had been through a railway accident more than once in their lives.

Mr. H. A. T. FAIRBANK (President) said he would like to know what was the record for second intubations. One child had been intubated by him a very large number of times; and he could remember another who was treated for a long time. These children had, however, been the subjects of stenosis.

Hypo-pituitarism with (?) Cerebral Diplegia.—A. G. WATKINS, M.B., B.S.
(for HUGH THURSFIELD, M.D.).

E. R., a boy, aged 11½ years, an only child, with no relevant family history or past illnesses.

Premature birth at 7 months. Slow development; did not sit up till age of 1 year and 9 months, or begin to walk until he was over 3 years old.

When 3 years old was seen by Dr. Thursfield, who found a right-sided hemiplegia and difficulty in walking. The child was able to perform voluntary movements while lying in bed. There was no sign of dyspituitarism at this time.

From 3½ to 4 years of age he became increasingly fat, but walking gradually improved till about 9 months ago, when the right ankle became stiff.

He did not go to school till he was 7½ years old, and his mother says that he is now in the class appropriate to his age.

There is no history of headache, vomiting, or polyuria.

On Examination.—Weight, 6 st. 12 lb.; general increase in subcutaneous fat, especially over thorax and abdomen. Genitalia small. Urine normal; specific gravity 1020 to 1022.

Visual fields normal; no nystagmus; retinae and discs normal.

Mentally slow, but of fairly good intelligence. Circumference of skull, 20 in.

Nervous system: Normal pupil reaction; very slight left-sided facial paralysis; tremors of hands, especially right; tremors, to a less extent, of the right leg. Some involuntary twitchings of face. Right arm and leg spastic, with increased tendon reflexes and a definite Babinski response.

No spasticity of left side, but tendon reflexes are brisk, with a plantar flexor response, though a definite Babinski response has been obtained on one or two occasions.

Hemiplegic contracture of right ankle. The gait is unsteady and swaying; patient walks mostly on the toes, owing to contracture of right ankle.

Sugar tolerance curve normal.

Skiagram of skull shows no enlargement of pituitary fossa.

Discussion.—Dr. FELDMAN said that, in his view, the skiagram not merely "showed no enlargement" but showed a great diminution of the pituitary fossa.

Dr. STOLKIND said he agreed with Dr. Feldman that the pituitary fossa was small, but it was not abnormally so; the sella turcica was closed in. He had himself shown a case of hypopituitarism in a boy who lived seventeen years.¹ He frequently had epileptic fits, as well as periods of polyphagia, polydipsia and polyuria. The patient had high sugar tolerance. He (Dr. Stolkind) had hesitated in that case to advise sellar decompression by re-section of overlapping clinoid processes. The boy had died during a fit.

¹ *Proc. Roy. Soc. Med.*, 1926, xix (Clin. Sect., 19).

Pre-Natal Infection with Smallpox.—W. M. FELDMAN, M.D.

This baby was brought to my out-patients' department at St. Mary's Hospital, Plaistow, on account of some minor ailment. There were several smallpox scars on the nose, on the buttocks and in other places. The mother gave a history of having been admitted into a smallpox hospital last July. After her discharge the baby was born a month prematurely in September. The child is doing quite well. It was not considered necessary to have it vaccinated, although a "test" vaccination might well have been performed.

Discussion.—Dr. FELDMAN said that the various possibilities that might occur when a pregnant woman was exposed to smallpox were as follows:—

(1) Both mother and fetus might escape infection. (2) The mother might get an attack of the disease and the fetus might (a) be killed (resulting in abortion); (b) be born dead or alive, with a smallpox eruption; (c) be born with smallpox scars, showing that it had gone through an attack of smallpox inside the uterus. [The case shown that afternoon was an example of this occurrence, which he (Dr. Feldman) believed to be the rarest of all]; (d) be born with no smallpox and either (i) escape altogether, or (ii) develop the disease soon after birth; (e) lastly, in the case of multiple pregnancy it might happen that one or more fetuses were born with smallpox, the others having escaped infection.

Dr. J. D. ROLLESTON said that this was a very rare case. Thirty years ago he had seen a child who was born with the lesions of smallpox during the epidemic in London at that date, and during the fortnight that he was in a smallpox hospital on that occasion he did more obstetric work than he had done before or since, because smallpox frequently caused premature confinement. That was the only previous case he had seen in which a child was born with the lesions of smallpox.

Two Specimens of Back Pressure Kidneys associated with Phimosis.—W. M. FELDMAN, M.D.

The first case was that of a baby a few weeks old who was in the wards two years ago. I do not at the moment remember the details, but he had very bad phimosis, although he was able to urinate.

Post-mortem.—Bladder hypertrophied; ureters hypertrophied and dilated; pelvis of kidneys dilated.

The second case was in an older baby, but one under a year old, who was in the hospital on account of pyelitis. He also had well-marked phimosis, and the same conditions were found post-mortem as in the first case.

Discussion.—The PRESIDENT asked what was the condition of the meatus in these cases, as he had been impressed with the importance of the meatus, from the obstruction point of view, far more than with the condition of the orifice of the prepuce. Here the prepuce was long with a small opening and it did not obstruct. What was obstructive was the meatus urinarius, and that was so especially after circumcision, which was often followed by scabbing, causing the child to cry when beginning to micturate, for the stream could only be started by forcing the scab away from the orifice. He doubted whether phimosis caused back pressure.

Dr. W. P. H. SHELDON said he agreed that these specimens demonstrated the effect of back pressure, notwithstanding the early age at which the pathological changes had been found. A few months ago he had reported¹ the case of a male child who died aged a fortnight, in whom the same changes were found as in the present specimens. In his case, the cause of the back pressure was found to be a congenital valvular formation in the urethra.

He did not consider that phimosis was a likely cause of the changes present in these cases, and he would like to know whether Dr. Feldman had examined the urethra in his cases post-mortem. He would have expected a cause of obstruction to be found between the base of the bladder and the meatus, such as a valve formation of the urethral mucosa.

¹ *Lancet* 1928, (ii), 1126.

Dr. KINGSTON BARTON said that phimosis had almost nothing to do with these kidney cases. He too suggested that both the kidneys now exhibited were septic, were in fact miniature examples of what used to be termed "surgical kidney." He would have thought that phimosis, *per se*, had nothing to do with kidney dilatation. In old cases in which operations were done for prostatic trouble, one constantly saw a greatly hypertrophied bladder, due to obstruction in the urinary tract in the prostatic organ. If the patient kept clear of sepsis, the hypertrophy of the bladder proceeded physiologically and kept at bay any dilatation of the upper urinary tract until sepsis came on, and at the advent of sepsis the case went to pieces.

Dr. CHODAK GREGORY said that such an occurrence might take place in a female child. At a meeting of the Section in October, 1927, she had shown, with Professor J. H. Dible, a specimen from a case of interstitial nephritis in a girl aged 8 years who had died suddenly from uræmia. There was an adenomatous growth in the kidney, the bladder was much enlarged, and the ureters were greatly dilated, but there was no urethral obstruction.¹

Mr. ERIC CROOK said it would be of great interest to see a microscopical section of the kidney, as the back pressure did not appear to have damaged the kidney to the extent which would cause death from renal insufficiency.

Dr. FELDMAN (in reply) said that he had not investigated the condition of the urethra; it did not occur to him at the time to look for any valvular obstruction there. In view, however, of the fact that whatever the obstruction, it was not complete, the condition might theoretically be due just as much to phimosis as to valvular obstruction.

It was theoretically possible for an infant to die a few weeks or a month or two after birth with symptoms of back pressure of the kidney, the result of partial obstruction, as he believed that urinary secretion began a considerable time before birth, and that therefore this condition might develop a few weeks after birth. Possibly it might be septic, but that was unlikely because of the brief time. Neither of the children was ill longer than two or three weeks.

He agreed with Dr. Chodak Gregory that the condition might occur in girls; he would like to know whether there was, in that sex, any obstruction corresponding to the phimosis in the present specimens. Most of the authorities mentioned hydronephrosis as a possible accompaniment of severe phimosis.

Banti's Disease (?) Thrombocytopenic Purpura.—T. STANLEY RODGERS (for DONALD PATERSON, M.D.).

R. B., a girl, aged 5 years and 9 months. Admitted to Westminster Hospital, April 14, 1930, complaining of red spots under the skin.

Six months ago she had an attack of jaundice, which lasted five or six weeks, and was accompanied by malaise and a poor appetite, but nothing else. (She had had an antrum drained a few weeks before.) Since then she has had on occasion:—(1) Bleeding from the gums, (2) dark urine, (3) black stools; (4) dark spots under the skin, which faded, as bruises do, with a change of colour.

General health good; appetite fair; bowels opened regularly; micturition normal; sleeps well. No attacks of abdominal pain or diarrhoea.

Past History.—Has had whooping-cough, measles and German measles; has otherwise been healthy.

Family History.—Father, mother, sister (9 years), brother (4 years), alive and well. No history of similar condition. No jaundice, no "bleeders."

Condition on Examination.—April 14, 1930. Pulse, temperature and respiration, normal. Weight, 45½ lb. Healthy looking, well nourished child. Good colour. No jaundice. Telangiectases on face, one on left forearm and one on right hand. Tongue clean. Throat and teeth healthy. Lungs healthy. Heart healthy. Abdomen: liver, enlarged (two fingers' breadth), firm, not tender; spleen enlarged (one finger's breadth), also firm and not tender. Nothing else abnormal felt. Central nervous system normal. Urine normal. Stools normal. Legs: fading bruises on both shins (no history of injury).

¹ *Proceedings*, 1927, xxi, 219 (Sect. Dis. in Child., 7).

April 16, 1930.—*Blood-count*: R.B.Cs., 4,120,000; Hb., 80%; C.I., 0.97; W.B.Cs., 7,200. *Differential count*: Polys. (neutrophil), 39%; monos., 10%; lymphos., 51%. *Fragility*: Began in 0.5% saline, ended in 0.4% saline. Platelets, 71,000. Wassermann reaction, negative.

April 25, 1930.—Blood transfusion, 100 c.c.

April 26, 1930.—*Splenectomy* (Mr. Carling). Spleen was enlarged (7½ oz.) and fibrosed. Liver showed evidence of cirrhosis, with some peri-hepatitis.

Unfortunately, a post-operative lobar pneumonia developed (left side). The temperature returned to normal in twelve days.

May 5, 1930.—*Blood-count*: R.B.Cs., 2,760,000; W.B.Cs., 43,800. *Differential count*: Polys., 89%; lymphos., 9%; basos., 2%. Platelets, 250,000.

May 21, 1930.—*Blood-count*: R.B.Cs., 6,120,000. Platelets, 210,000.

May 22, 1930.—Since admission to hospital there has been no hæmorrhage and no jaundice.

The telangiectases on the face appear less obvious than on admission. Apart from the pneumonia which has now cleared up almost entirely, there has been little change in the patient's condition.

Advanced Banti's Disease, treated successfully by Ligature of the Splenic Vein.—E. C. WARNER, M.D.

J. F., a boy, aged 10 years, first seen a year ago at the Miller Hospital on account of splenomegaly and ascites. He had just been discharged—after diphtheria—from a fever hospital, where the ascites and splenomegaly had first been observed; towards the latter end of the period in the fever hospital he had had hæmaturia.

On Examination: Distinctly drowsy and anæmic; large amount of fluid in abdomen. On deep palpation, small, hard cirrhotic liver could be felt; spleen was enlarged to umbilical level. Front of the chest and abdomen showed many large distended veins, in which blood-flow was in upward direction; fluid at bases of both lungs and in the pericardium (confirmed by X-ray examination). Urine contained a considerable number of red blood-cells; no casts. Albumin was not in excess of amount of blood. Blood-pressure 140/105. At no time was there any pyrexia.

Blood-count.—R.B.Cs., 3,487,000; Hb., 62%; C.I., 0.89; leucos., 4,000. *Differential count*: polys., 85%; lymphos., 10%; hyals., 4%; eos. 1%; platelets, 160,000. A little ascitic fluid withdrawn for examination showed some blood-cells (? contamination), lymphocytes 530 per cmm. and protein 0.8%. The Wassermann reaction in blood and ascitic fluid was negative. Liver tolerance, after 30 gm. levulose, showed: Resting blood-sugar 0.105%; after three-quarters of an hour, 0.173%; one and a half hours, 0.120%; two and a quarter hours, 0.114%.

On these findings a diagnosis of Banti's disease was made, and the drowsiness of the patient, the extremely poor liver tolerance, and the polyserositis indicated that the disease was advanced. Under treatment by complete rest in bed and ample glucose there was some improvement; the fluid disappeared from the chest and largely from the abdomen.

In view of the general condition it was decided that splenectomy would be exceedingly dangerous, and following the work of R. M. Pearce on the effects of ligature of the splenic veins in animals, this procedure was decided on. On July 1, 1929, Mr. R. C. B. Ledlie tied the splenic veins. The operation was a simple one; the only difficulty was bleeding from the anastomoses in the abdominal wall and gastro-splenic omentum. The diagnosis of cirrhosis of the liver was confirmed. The recovery was rapid, and apart from some epistaxis and a little coffee-ground vomit, was uneventful. Seven days after the operation the blood-count showed: R.B.Cs., 3,125,000; Hb. 53%; C.I., 0.86; leucocytes, 6,250. *Differential count*: polys., 73%; lymphos., 16%; hyals., 11%; platelets, 500,000. September 16, 1929, the child

looked the picture of health. Blood-count on this date: R.B.Cs., 5,100,000; Hb., 84%; C.I., 0.82; leucocytes, 6,400. *Differential count*: polys., 73%; lymphos., 21%; hyals., 4%; eos., 1%; basos., 1%; platelets, 350,000. Liver tolerance after 50 grm. levulose, fasting value 0.104%; half an hour, 0.118%; one hour, 0.116%; one and a half hours, 0.106%—a normal result. May 12, 1930.—Liver tolerance after 50 grm. levulose was: fasting value, 0.110%; half an hour, 0.129%; one hour, 0.137%; one and a half hours, 0.137%. Dr. Brewer who made this test reported that there was "no evidence of hepatic deficiency." Since the operation the spleen and liver have remained the same size as before, the veins on the abdominal wall are much smaller, there has been no re-accumulation of ascitic fluid, and the boy has been at full work at school.

This case illustrates the fact that when splenectomy is difficult (e.g., on account of adhesions), or when the operation might be fatal on account of the general condition of the patient, ligature of the splenic vein has almost as good an effect, and is rapidly performed. In this case the rapidity of the recovery of the liver function has been remarkable.

Narcolepsy.—EVELYN MACLAGAN, M.B., B.S. (for DONALD PATERSON, M.D.).

G. B., female, aged 8 years.

History.—Six months ago her mother and school-teacher noticed that she kept falling asleep at odd times. She now sleeps two or three times daily, sleep lasting 10 to 30 minutes. Sleepy fits come on after exertion (e.g., in the tram after attending hospital) or after meals. She sometimes walks along the street dozing. Attacks of sleep come on suddenly—sometimes her head drops down and hits the desk when at school. She is quite unconscious when asleep and wakes surprised to find she has been sleeping. She can be awakened, but is cross and peevish if this is done. She goes to bed 7.30, goes to sleep easily, but is restless—tossing and talking and sometimes walking in her sleep. Ready to get up in the morning. Lively when not asleep. On one or two occasions she has fallen down when excited. First noticed when dancing. Knees gave way and mother could not pull her up. Child says she "feels floppy" when laughing and then falls.

Mother has noticed that child sometimes has to wait two or three minutes before being able to micturate.

She is quite well, but very often complains of nausea; does not vomit.

On Examination.—Tonsils small. A few bad teeth. Tongue furred; breath offensive at first visit. Heart normal, but rate persistently 140 or over.

Lungs normal. Nervous system: No abnormal signs except tremor of tongue noticed at first visit. Discs normal.

Blood and urine analyses:—

BLOOD ANALYSIS.							Mgm. per 100 c.c.
Inorganic phosphorus	...	...	...	...	...	...	4.7
Serum calcium	...	...	...	...	...	...	10.6
Cholesterol	...	...	...	...	...	...	139
Uric acid	...	...	...	...	...	...	2.6
Urea	...	...	...	...	...	...	24
Sugar	...	...	...	...	...	...	116%
Total solids	...	...	...	...	...	...	18.4%
							(Normal 19.23%)

ACETONE ESTIMATIONS.

Urine.							Mgm. per 100 c.c.
Acetone and aceto-acetic acid	...	...	...	...	...	...	2.3
β oxybutyric acid	...	...	...	...	...	...	4.6
Total acetone bodies	...	...	...	...	...	...	6.9

Blood.						Mgm. per 100 c.
Acetone and aceto-acetic acid ...	...	...	...	...	...	9.3
β oxybutyric acid ...	...	...	...	...	...	19.8
Total acetone bodies ...						29.1
Normal for blood acetone ...	...	...	...	...	...	0-1
" " β oxybutyric acid ...	...	...	...	...	...	0-3
Total ...						0-3

Wassermann reaction negative.

Treatment.—She has had treatment to correct constipation. Luminal gr. $\frac{1}{4}$ t.d. during last fortnight. One week in bed.

Past History.—Broncho-pneumonia four times when a baby. Measles, whooping-cough, chickenpox. Influenza a year ago, consisting of coryza and temperature, lasting a fortnight.

Family History.—Father sleeps a great deal. "Falls asleep in a minute" when he sits on a chair. Mother and two other children well. No epilepsy in family history.

Discussion.—Dr. STOLKIND said that he had heard from the mother that two years ago the child had a "cold" with fever, was weak and sleepy, and was in bed for about a month. It was probable that she had epidemic encephalitis, and that this was therefore a case of "symptomatic" narcolepsy which appeared about a year and a half afterwards. It would be interesting to follow the case and note if there were any further sequelae of encephalitis.

He (Dr. Stolkind) had had under his observation a case of true narcolepsy in a young man employed as an engine driver. The patient suffered from irresistible attacks of sleep which came on suddenly, even when he was on duty, and the train was in motion. He remained standing at his post, and only the vigilance of the second driver, who knew of his condition, prevented an accident. The attacks occurred frequently, sometimes several times in one day. The illness lasted for over a year.

Mr. W. G. WYLLIE said he would hesitate to call this a case of idiopathic narcolepsy, as he agreed that the history seemed to make it clear that the patient had had encephalitis lethargica. Several cases of narcolepsy after encephalitis lethargica had been described by Dr. W. J. Adie and others.

Measles Encephalo-mylitis.—W. G. WYLLIE, M.D.

G. J. B., a girl, aged 1 year and 6 months. A measles rash developed on March 17, 1930. Seven days later (March 23) her temperature rose suddenly to 107° F., and she had a right-sided convulsion with nystagmus to the right. The next day the temperature was 103° F., there was slight congestion of the ocular fundi, and the right arm was spastic. The pupils were inactive to light for a week and the child was lethargic for a similar period of time.

Progress.—The mother states that the child lost her speech during the illness. Now she only says single words, e.g., "mum" and "dad." The right arm is recovering slowly, but is still a little spastic and the child is disinclined to use it. There are no other signs of paralysis. The child was vaccinated in infancy.

She seems to be getting well rapidly, with regard to both the monoplegia and the mental condition. I think most of the described cases of measles encephalo-mylitis have recovered completely.

Congenital Ectodermal Defect.—R. COVE-SMITH, M.B.

G. D., female, aged 6 years. Came to hospital complaining of colitis. *Previous history:* measles, chickenpox, whooping-cough, and rubella. According to mother, child has never sweated freely. She shows scanty hair on head and scanty outer third of eyebrows and general diminution of body hair. Sweat-glands seem to be absent. Teeth irregularly spaced and conical in shape; lateral incisors absent.

This case is one of the hereditary anidrotic type of ectodermal defect. The patient is the third child in the family; another child, also a girl, aged eighteen months, has only six teeth and scanty hair, but otherwise does not seem to be abnormal. The patient shown has eight teeth in the upper jaw and nine in the lower. As far as the family history goes, there is a record of sparse hair and defective teeth two generations back, but neither of the parents nor the parents' brothers and sisters show anything which can be regarded as abnormal in their ectodermal system. This case is one of correlated variability as mentioned by Darwin, who gives, on the authority of Mr. Wederburn, the history of a Hindu family in which ten men of four generations were furnished with four small weak incisors and eight posterior molars. The men thus affected have very little hair on the body, and become bald early in life. They also suffer much during the hot weather from excessive dryness of the skin. Though the daughters of the family are not affected, they transmit the tendency to their sons, so the condition is a sex-linked recessive characteristic. In the case of G. D., who is shown, the condition is of course dominant and the females of the family are affected.

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Dr. E. A. COCKAYNE said that Darwin had described the type which occurred only in males and, like hæmophilia, was transmitted by apparently normal females. Thadani¹ had given an account of the later generations in the *Journal of Heredity*. This type, evidently inherited as a sex-linked recessive, had also been found in Europeans. The type shown to-night was rarer and affected both sexes. Guilford² and Atkinson³ had described one such family, and he had himself shown at a meeting of this Section a boy, two of whose aunts had the defect, but in a lesser degree. As the child seen to-day was a girl, she must be of this type, and like some of the other females she had the defect in its least severe form, as some teeth were present and the hair was fairly long. She was however typically frail and undersized. There were two defects described under the name of congenital "anidrotic ectodermal dysplasia," one almost always very severe and inherited as a sex-linked recessive, the other more variable, often less severe in females, but affecting both sexes and inherited as a dominant.

¹ *Op. cit.*, 1921, xii, 87.

² *Dental Cosmos*, 1883, xxv, 113.

³ *Boston Med. and Surg. Journ.*, 1883, cviii, 310.

Section of Laryngology.

[Summer Meeting, June 20, 1930.]

CASES AND SPECIMENS.

Deformity of Pharynx after an attempt at Removal of the Tonsils.

—NORMAN PATTERSON, F.R.C.S.

Male, aged 25. At the age of 7½ underwent an operation for the removal of tonsils and adenoids. This operation was, apparently, not an unqualified success, and six months later another was performed in order to remedy some condition resulting from the first. This second operation was followed by daily insertion of the finger in order to improve the nasal breathing. The patient was examined by me, April 8, 1930. The tonsils had not been completely removed; there was much scarring in the neighbourhood of the pharynx and palate, and only a small opening between the oro- and naso-pharynx, almost entirely obscured by the uvula which hung down in front of it. The patient was unable to breathe through nose during sleep. He could improve the nasal breathing during the daytime by pushing his tongue upwards towards the roof of the mouth; if the uvula was pulled forwards much improvement followed. He complained of being easily tired and frequently suffered from colds in the head. On April 25, after a consultation with Mr. Tilley, I removed a portion of the uvula, and since then the breathing during the daytime has improved, but it is no better at night. Lateral to the central opening a probe can be passed between the palate and the posterior pharyngeal wall on both sides, showing that the palate is not adherent in this region. Opinions are asked as to the best method of treating this case.

Discussion.—Sir JAMES DUNDAS-GRANT said he wondered whether any constitutional dyscrasia was present to account for this unusual sequel.

Dr. T. A. CLARKE said he had now under his care two similar cases. In one the occlusion of the naso-pharynx was complete; in the other a fine probe could be passed. Two years ago he had had a similar case, of which he afterwards lost sight. All three cases had been operated on several years previously by other surgeons. None of the patients had any other stigmata, but all had a positive Wassermann reaction; they were congenital syphilitics. He thought that the constitutional condition was responsible for the excessive post-operative adhesions and scarrings.

The PRESIDENT said these cases were usually the result of unskilful attempts at tonsil-dissection; amateurs would do better by keeping to the guillotine, as by dissection they might remove a good deal of the pharynx and leave the tonsils behind.

Dr. J. S. FRASER said that Dr. Gardiner, of Edinburgh, had used the Thost apparatus, with good results, for dilating the larynx in cases of stricture following intubation for diphtheria. He did not know whether the intubation or the diphtheria was responsible for the stricture. The dilating apparatus was fitted in above the tracheotomy tube and worn for long periods. He wondered whether, in the present case, an enlarged form of such an apparatus might be inserted through the mouth and worn at intervals to try to dilate the opening between the mouth and the naso-pharynx.

Sir JAMES DUNDAS-GRANT said that in one of his cases the patient had derived great benefit from the ordinary tracheotomy dilator used the other way up.

Mr. HERBERT TILLEY said that he saw this case with Mr. Patterson; the chief difficulty had been in breathing at night. At that time the uvula was practically intact and hung over the small hole immediately behind it. The removal of the uvula had seemed to give so much relief that this fact, coupled with the definite experience that it was one of the most difficult conditions to deal with by surgical measures, inclined the speaker to admit that nothing further should be attempted.

Mr. J. F. O'MALLEY said that at first sight he felt that surgical ingenuity should attempt something for this case, but there was little loss of function, and the patient looked physically fit. He (the speaker) had had an experience of the kind fifteen years ago, and he had not invited a second one. He had shown the patient, a child, at a meeting of another Section.¹ There was extensive scarring of the naso-pharynx. He was pleased with the operation, but, after healing, the condition was worse than before. He tried dilatation, and by that time there was trouble in the ears, and the patient was miserable for a long time. When the condition settled down he was glad to leave it.

Mr. MICHAEL VLASTO said he did not subscribe to the attitude of doing nothing. It seemed at first sight that it might be easy to remove the fleshy mass by diathermy or excision, but if that was done the subsequent contraction and adhesion made the condition as bad as or worse than before.

Although he had had no personal experience of such cases, he suggested a course of action which had been adopted in such conditions as syndactylism and synblepharon. If the fleshy mass were intubated through the nose, in accordance with the law of angular cicatrization a channel lined with epithelium would ultimately be obtained. A plastic operation might then prove successful.

Mr. HAMBLEN THOMAS said that one would have to be careful about intubating or enlarging the hole or communication between the nasal pharynx and the oral pharynx, as there would be a lack of mobility of the soft palate, and there would afterwards be troubles such as regurgitation through the hole. If an operation was to be done he thought the case should be handed over to an expert in plastic surgery, who would place an obturator between the hard palate and the soft palate.

Sir STCLAIR THOMSON said that there had been a set debate on this subject in the old Laryngological Society² of London, at which most of the suggestions put forward by Mr. Vlasto were discussed. That was in the days of Sir Henry Butlin, Sir Felix Semon and general surgeons skilled in cleft palate work. They had attempted all these methods and had honestly put forward their results. These agreed with what Mr. Tilley and Mr. O'Malley had just said, namely, that if a patient could tolerate his condition he should be advised to do so. The methods of treatment referred to were not only failures, but in many cases they caused ear or sinus trouble and traumatism inside the nose, and the last stage of such patients was often worse than the first.

The PRESIDENT said that he had operated on three or four such cases, but had not been satisfied with any of them. In one, which he had shown a year ago, he had used diathermy, and the diathermy point had been carried too much to one side, so that a series of disturbances had been set up: the hypoglossal nerve had been destroyed and one side of the tongue had been paralysed.³ Septic meningitis developed, but the patient recovered. Ultimately healing took place, and the previous opening was rather larger than it had been. Even when the opening remained, however, the normal flexibility of the soft palate was not secured. Breathing, no doubt, was possible through the nose, but speaking also took place through the nose, as there was no movable soft palate to direct intonation. Another plan consisted in keeping tubes in the pharynx for many weeks, and at the end of the time epithelialization might be secured: but even then there was contraction, with reconstitution of scar tissues. On one occasion he had used a laminaria tent to dilate the opening, but while being taken out, the tent had broken, a portion being left between the nose and the posterior pharyngeal wall, and this had caused a good deal of trouble before it could be removed. He therefore agreed that in these cases we should leave well—or moderately well—alone.

¹ *Proceedings*, 1914, vii (Sect. Dis. in Child.) 80.

² *Proc. Laryng. Soc. London*, 1893, i, 47; 1897, v, 4; 1903, x, 81; 1907, xiv, 106.

³ *Proceedings*, 1929, xxii, 1110 (Sect. Laryng. 28).

Mr. NORMAN PATTERSON (in reply) said that in one case in which the soft palate was adherent to the posterior pharyngeal wall and there was no opening into the naso-pharynx, operation had been followed by a remarkably good result. After the operation he had inserted two rubber drainage tubes and these were worn for a year; they had to be changed frequently.

Swelling of Naso-pharynx and Hard Palate: Case for Diagnosis.—

K. W. MACKENZIE, M.B.

H. C., aged 48.

November 19, 1928.—Eighteen months' history of swelling of upper part of right side of neck, becoming gradually larger. Some pain.

On Examination.—Hard swelling of the size of an egg, under lateral border of sterno-mastoid and just below mastoid process; fixed to deeper structures.

Under a general anæsthetic no primary malignant focus found in mouth, pharynx, larynx or nose. Swelling removed: section showed "inflammatory tissue only; no evidence of secondary deposit." The spinal accessory nerve was cut.

April 24, 1929.—Indefinite swelling of hard palate. This was incised and a portion taken for examination.

Pathological Report.—"Section shows normal epithelium with mucous glands, beneath which is lying a portion of new growth consisting of masses of spindle cells in concentric tissue stroma. It resembles a parotid tumour but is probably of the nature of an epithelioma."

Eight needles of radon were inserted into the swelling and left in for one week. The swelling disappeared.

October 9, 1929.—Pathological section of portion taken from swelling of lateral wall of naso-pharynx of right side showed no evidence of new growth.

November 1, 1929.—The case now came under my care. It was thought advisable to explore the antrum in search of a new growth, despite the fact that an antral operation had been performed in November, 1928.

It was discovered that the previous operation had consisted of draining a large dental cyst into the nose, and the antrum was still present but consisted of a small space between the posterior wall of the cyst and the posterior wall of the antrum. It was full of pus and was drained by removing the posterior wall of the cyst. At the end of the operation a swelling was found between the cheek and the last molar. A needle was inserted and a large quantity of straw-coloured fluid escaped. This fluid was examined and the report was as follows:—The deposit from this fluid shows red cells and an occasional epithelial cell: ptyalin is present: cultures gave a growth of *Staphylococcus albus* only.

This swelling diminished considerably in size and gave no more trouble.

Two days after the operation another swelling was noticed at the posterior edge of the hard palate and medial to the last molar. This was incised and although no pus was found, there was a cavity, extending upwards and backwards into which the little finger could be inserted. B.I.P.P. was applied to the walls of the cavity and a skiagram was taken. The cavity discharged pus for a few days and then dried up.

Endothelioma of Left Tonsil—Radium Treatment—Recurrence in Abdomen—Death.—Specimen shown.—J. F. O'MALLEY, F.R.C.S.

C. S., male, aged 42.

History.—April 1, 1929.—Swelling in left side of throat, of six weeks' duration.

On Examination.—Large hard mass occupying left tonsillar fossa, deeply ulcerated in front.

April 2, 1929.—Under general anæsthesia a piece was removed, examined microscopically, and pronounced to be carcinoma of the endotheliomatous type.

Radium was inserted (2×25 mgm., 1×50 and 5×10 of radium bromide, for 40 hours = 4,280 mgm. hours).

Patient reported on October 17, 1929. There was no trace of growth in throat or neck and he was very fit.

January, 1930.—Patient came under the care of Mr. C. P. G. Wakeley at King's College Hospital, on account of symptoms of intestinal obstruction.

Exploration revealed large masses of growth in the liver, stomach, colon and posterior abdominal wall. This growth proved to be typical lymphosarcoma. There was no sign of recurrence in the neck or fauces. The patient died early in April, 1930.

I am showing this specimen in connection with a case shown by Mr. Vlasto at the last meeting, when suggestions as to treatment were invited. I then said that I had a similar case, and this specimen is from that case. Although my treatment in April last year was apparently very successful—as six months afterwards the patient was free from growth and was feeling well—he died from recurrence in April this year. So that we must wait a long time before we can consider a case cured. The sections from the tonsil and the abdominal growths are microscopically identical although two different pathologists used nomenclature which seemed to indicate that they were not of the same nature ("endothelioma" and "lymphosarcoma," respectively).

Discussion.—Mr. VLASTO said that there seemed to be a difference of experience in this respect. Mr. Norman Patterson had shown a case recently in which the end-result was disastrous. Mr. O'Malley had employed radium treatment, and in his case there had been some measure of relief, as the patient had remained well for six months. He (the speaker) could not claim so satisfactory a result in his case after deep X-ray therapy.

Mr. MUSGRAVE WOODMAN said he had had a case in which the pathological report was sarcoma, and there had been secondary deposits in the neck and in the liver which were found to be carcinomatous. He particularly noted the fact that Mr. O'Malley had put a large dose of radium into the tonsil for a relatively short time. He (the speaker) had done this in one or two cases, with similar results to those in Mr. O'Malley's case. He had therefore consulted Professor Sidney Russ, who said that in the case of the tonsil one should use a smaller dose of radium and keep it there for a longer time, as the tonsil substance was so soft that it easily broke down, and an explosive dose would "blast" the cancer cells to different parts of the body. In most of these cases, however, the patients died within a year from secondary deposits in other parts of the body.

Mr. A. D. SHARP said that six months ago he had seen a patient who had a large tumour in the left tonsil which the pathologist reported as carcinoma. It was inoperable, and he had asked a surgeon to see and take over the case. There was great enlargement of the cervical glands. Operation being out of the question, radium was tried, needles being inserted along the line of the tumour, the total used representing 1,000 mgm.-hours. Needles were put in for a week. The treatment had been so successful that all traces of the tumour had disappeared. To the glands 2,000 mgm.-hours were applied, the needles being left in for a fortnight. Now nothing but a scar was to be seen. Such a case renewed one's hopes of beneficial results from the use of radium in the treatment of malignant disease.

Dr. J. S. FRASER said that the Radium Commission, which was lending out radium to various hospitals, insisted on well-kept reports of all cases, which had also to be followed up systematically for months and years. It was only when a series of cases was followed up for a long time and tabulated, that an accurate knowledge of the results of radium treatment could be obtained. It was much more valuable to have these tabulated results than to hear of isolated brilliant cases. There was also a tendency to publish one's good results and leave the others unreported. This latter course led to the belief that, for instance, some 60 per cent. of the cases of brain abscess recovered, whereas the proportion of successful results was probably only 30 per cent., i.e., when all cases operated upon by one surgeon, or at one hospital, were followed up and reported.

The PRESIDENT said he thought that most people in dealing with lymphosarcoma had had an experience similar to Mr. O'Malley's. The local growth disappeared under radium treatment but, in the long run, secondary growths appeared and the patient died. Probably the reason was that the case did not come to the surgeon before dissemination had set in.

Hæmoptysis due to Cryptal Ulceration of Tonsils.—E. A. PETERS, F.R.C.S.

Mr. W., aged 44, complained that in February, 1930, and on a later occasion, he had brought up two teaspoonfuls of blood. Dr. Carmichael examined the chest but found no evidence of tuberculosis. This view was confirmed by radiography. On examination of the tonsils—which were reported to have been removed in 1913—there were abundant signs of lacunar tonsillitis. On the application of Bier's apparatus, a drachm of blood escaped from three crypts. The tonsils were removed by dissection at a later date. There was no excessive bleeding at the operation nor was there evidence of new growth in the tonsil.

Discussion.—Sir JAMES DUNDAS-GRANT said that he frequently had cases of hæmoptysis referred to him to see if he could discover any cause in the throat. The method now described was one he intended to apply in such cases in the future. It was a good cleansing method in chronic tonsillitis. The use of Bier's apparatus was advocated by Dr. Le Mée for testing whether a tonsil was mischief-making; he massaged it with a miniature rubber roller, and afterwards applied Bier's apparatus. If the tonsil condition was virulent there was evidence of disturbance in the blood-picture after this liberation of toxins.

Dr. DOUGLAS GUTHRIE asked whether this so-called "ulceration" of the tonsil crypt was of pathological significance. It was difficult to determine this, because one could not define a "normal" tonsil. In textbooks of normal histology one found such statements as the following: "Many lymph cells migrate through the epithelial covering of the tonsil on to its free surface, and enter the mouth to become the salivary corpuscles." This statement, made by Stöhr in 1882, seemed to have been copied from book to book ever since. The passage of leucocytes through the epithelium was in places so active that the surface layer became packed with them, and it was difficult to distinguish the epithelium from the tissue beneath, so that the appearance was that of an ulcer. The matter demanded further investigation from the standpoint of the laryngologist.

The PRESIDENT said that the bleeding might have come from the tonsil crypts, but in that case, considering the great prevalence of tonsillitis, one would expect such hæmorrhages to occur more frequently. Although one often heard hæmoptysis attributed to bleeding from the pharynx or larynx, in by far the largest number of cases the blood came from the lungs. If there was any doubt as to the source of the hæmoptysis—and sometimes there was considerable doubt—examination with the laryngeal mirror would often settle the question, as during the progress of a hæmoptysis from the lungs, the blood was visible in streaks about the trachea. Blood might be seen there even two or three days after the active hæmoptysis had stopped.

Mr. PETERS (in reply) said it was possible that the hæmoptysis was due to tuberculosis, but a small amount of hæmorrhage was so common after using the Bier apparatus on an infective tonsil, and the microscopical appearances of ulceration were so definite that he took it to be a sign of cryptal disease. Up to a point, practically every crypt was a focus of disease. The inflamed part of the tonsil was nearly always the crypta magna. In the lingual tonsil and adenoid area there was almost an entire absence of crypts.

On examination of material extracted from a crypt there were seen: (1) Masses of bacteria and cocci, evidently nurtured in the security of the crypt; (2) Polymorphonuclear cells with cocci; (3) Polymorphonuclear cells associated with blood indicating ulceration.

Dr. DOUGLAS GUTHRIE, referring to Mr. Peters' remark that the appearance was not seen in the lingual part of the tonsil, said that the illustration in one textbook, showing migration of lymphocytes towards the free surface, producing an apparent breach of surface, was drawn from the normal "lingual" tonsil.

Mr. PETERS (in reply to Dr. Guthrie) said that he had recently seen a case in which the whole lingual tonsil was much inflamed, and studded over with white pin-points—the openings of crypts; this condition was, however, exceptional.

A New Œsophagoscope and Bronchoscope.—C. HAMBLÉN THOMAS, F.R.C.S.

Dr. Haslinger's latest pattern of œsophagoscope and bronchoscope, with proximal illumination. In this model the lighting, which is powerful, is so arranged that the light does not have to be moved for instrumentation. Also, it is chromium-plated to prevent rusting. When it is in use an excellent light is thrown well beyond the distal end of the tube.

Section of Papilloma removed from the Left Aryteno-epiglottic Fold by the direct method.—E. A. PETERS, F.R.C.S.

Mrs. R., aged 57. Dr. Kennish reported that she had been hoarse for eighteen months.

On examination, there was a swelling of the size of a pea, loosely attached to the left aryteno-epiglottic fold. The cords were freely movable. Sir StClair Thomson recommended removal by the direct method, and this was carried out, the result being recovery of the voice.

I may mention that the patient has septic tonsils and nasal obstruction. A general anæsthetic was employed because she was extremely sensitive, and I thought it would be well to get the base of the growth away, with a view to possible malignancy.

Swelling below Left Malar Bone with Pain in Front of Left Ear: Case for Diagnosis.—W. H. JEWELL, M.D.

E. A. P., male, aged 56 years, came to hospital with four months' history of pain in front of the left ear, passing up to the forehead. There was slight swelling of the left cheek and there was some fullness of the gingivo-labial fold below the base of the left malar bone. There was pain, on pressure, over the left intra-orbital nerve.

Notwithstanding that the swellings below the malar bone and that of the cheek have increased, the pain has diminished. Left antrum wash clear.

Discussion.—Sir JAMES DUNDAS-GRANT said he thought there was some continuous irritation set up by the plate of artificial teeth, and that in this way a malignant process had been set going.

Mr. JEWELL (in reply) said that the report on an examination was to the effect that the swelling was not malignant. That report, however, he did not consider final. A larger piece of growth was required for examination. If it proved to be malignant, he did not think it was suitable for removal by the knife. He thought the cheek was involved, and when that was the case, he usually found that the condition was hopeless.

Mr. PETERS said that he would advise preliminary deep X-ray treatment and then opening of the antrum by the Caldwell-Luc operation. Afterwards the condition could be treated by radium or otherwise, as the biopsy or appearance suggested.

POSTSCRIPT.—The antrum has been opened below the left malar bone and a growth was found which proved to be epithelioma.—W.H.J.

FURTHER REPORTS OF CASES PREVIOUSLY SHOWN.

Dermoid Cyst of Floor of Mouth¹ (shown February 7, 1930).—DAN MCKENZIE, M.D.

The cyst was shelled out through a transverse incision in the floor of the mouth without any difficulty. It proved to be a dermoid. (Specimen shown.)

¹ *Proceedings*, 1930, xxiii, 786 (Sect. Laryng., 28).

Ulcerative Condition of Throat and Nose tentatively diagnosed as Actinomycosis (shown May 3, 1929).¹—MORTIMER WOOLF, F.R.C.S.

The lesion proved to be a salivary tumour of the palate which had become malignant.

A few weeks after the section was made the patient left the hospital. He (Mr. Woolf) saw him again later, and there was then much stridor with difficulty of

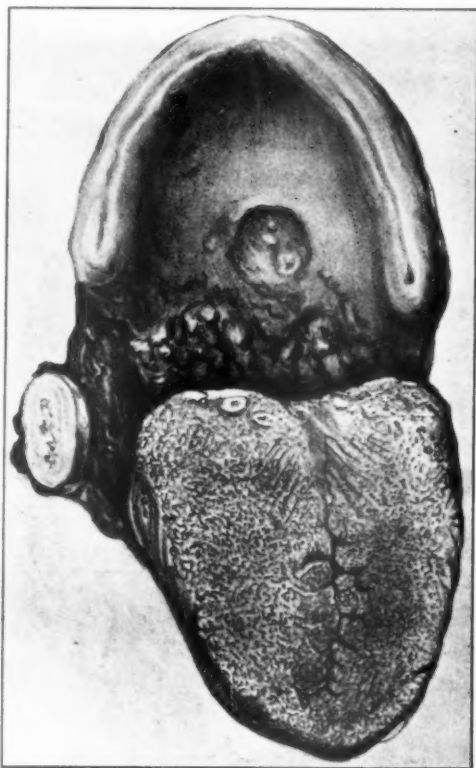


FIG. 1.—The tumour as it appeared post mortem. The ulcer on the palate occurred after a piece had been removed for section. (Mr. Mortimer Woolf's case.)

breathing and a swelling in the neck. He opened a large retropharyngeal abscess. The patient died shortly afterwards. The specimen shown had been obtained post mortem. The palate had become necrosed, and the growth could be seen spreading to the Eustachian tube. An enlarged gland contained epitheliomatous deposit.

¹ *Proceedings*, 1929, xxii, 1263 (Sect. Laryng., 35).

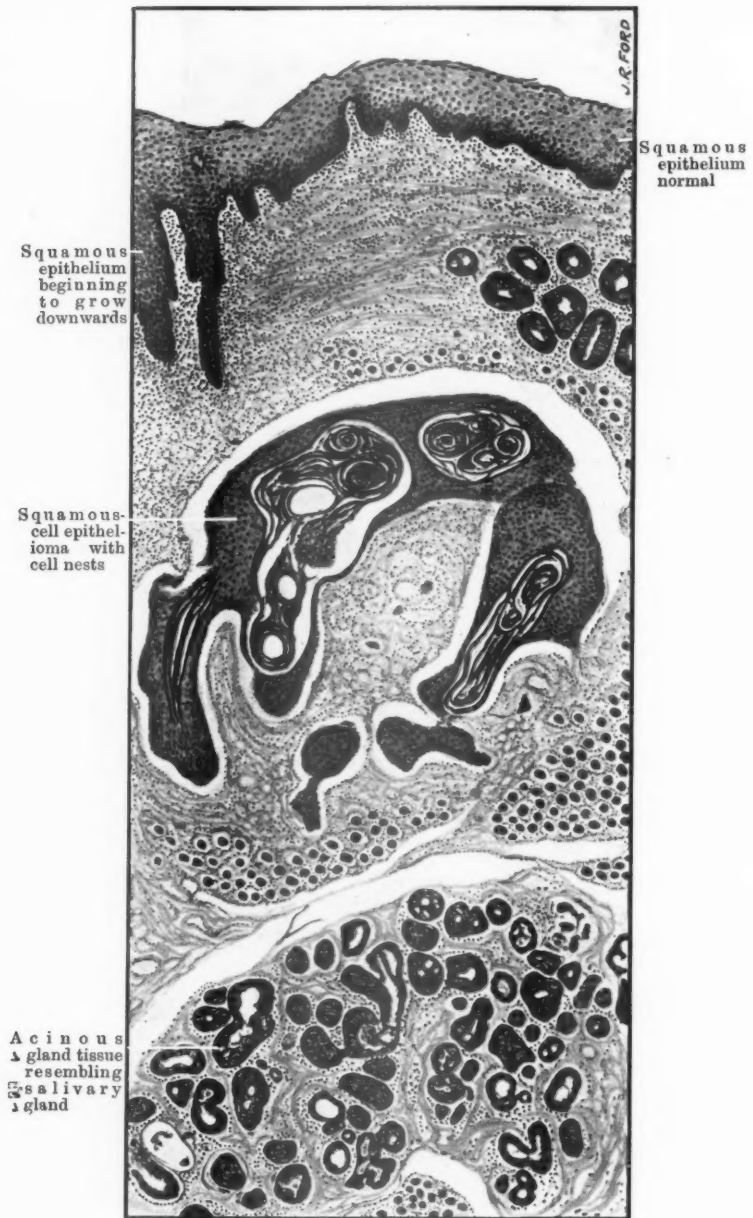


FIG. 2.—A composite drawing to show the various tissues of which the tumour is composed. (Mr. Mortimer Woolf's case.)

Pathologist's Report on Section of Tumour of Hard Palate.—The main mass of the tumour is composed of groups of lobules bound together by connective tissue, each lobule being formed by alveoli, with which are associated small ducts, the histological picture being identical with that of a salivary gland. This salivary gland tumour is covered externally by epidermis, which, for the most part, shows no evidence of a malignant process. But in one small area the appearances are such as to suggest that a malignant process—epithelioma—is commencing.

Post-mortem Report.—"There is a diffuse cellulitis of the neck, the infecting organism being a streptococcus. The tumour of the palate has disappeared with much necrosis of the hard palate. But in the posterior pharyngeal wall there are many protuberances, which, on microscopical examination, present similar features to those observed in the palatal tumour, but in this tissue the signs of a definite squamous-celled carcinoma are unequivocal—cell-nest formations, etc., being found deep to the lining layer of epidermal cells. In addition, there is a hard enlarged gland at the angle of the jaw which gives the naked-eye and microscopical picture of squamous-celled carcinomatous involvement."

Commentary.—"A discrete tumour of the hard palate, with a diffuse tumefaction of the pharynx, due to a growth of salivary gland structure, preceding a squamous-celled carcinoma of this area."

Growth on Right Side of Larynx, proved to be Papilloma (shown February 7, 1930).¹—H. BELL TAWSE, F.R.C.S.

This growth was attributed by the patient to "gassing" during the War and he is claiming a pension.

March 5, 1930.—Laryngofissure. Growth involved entire right vocal cord and adjacent parts of ventricular band, and spread across anterior commissure to other cord, backwards on to right arytenoid and hung into subglottic space. Growth was excised, together with piece of right ventricular band, which it had invaded, and anterior fifth of left vocal cord.

Pathological Report: (Royal College of Surgeons' Museum, Edinburgh).—"Sections show a papilloma, with acanthosis and hyperkeratosis and slender papillæ running up into the epithelium as cores. There is marked chronic inflammatory cell-reaction in the pedicle with hyperæmia. No evidence of tumour of malignancy."

The patient is now apparently quite well and his breathing is normal. His voice is permanently damaged.

Opinions are asked whether in view of this report the patient is entitled to a War pension on the grounds of past suffering and future uncertainty as to recurrence.

[A drawing of the larynx before operation was shown, together with two photomicrographs of a section of the tumour, that of the higher magnification confirming the pathologist's report.]

Discussion.—Dr. DOUGLAS GUTHRIE said that he had treated a case of epithelioma of the larynx, in which the question of a pension had arisen.² In July, 1924, he had performed total laryngectomy on a sergeant, aged 35, who had been gassed with chlorine in 1918, and had afterwards suffered from occasional hoarseness, which had become continuous two years before he (the speaker) saw him. That patient was now able to manage a poultry farm in Devon. It was considered that the "gassing" was at least a contributory cause of the growth and he was awarded a pension.

Sir STCLAIR THOMSON said that it would be interesting to know—just to satisfy one's mind in regard to the indications for laryngofissure—whether Mr. Bell Tawse now thought he could have removed the tumour through the mouth, and if not why not?

Sir JAMES DUNDAS-GRANT asked if the tumour was pedunculated, and if the tissues beneath the growth were involved. Applications of salicylic acid in alcohol had a very beneficial effect, both in diminishing papillomata and in preventing their recurrence.

¹ *Proceedings*, 1930, xxiii, 784 (Sect. Laryng., 26).

² *Proceedings*, 1926, xix (Sect. Laryng., 65).

Mr. BELL TAWSE (in reply) said he had performed laryngofissure because he was not satisfied with the pathological report, and he thought the growth might be infiltrating the ventricular band. He was glad he had done so, as he could not have removed the growth by the mouth, and if he had taken it away in portions, some would have been left behind. The growth did not infiltrate the ventricular band, but he had removed a shaving of the ventricular band with the tumour. The vocal cord was completely replaced by papilloma.

Ulcer in Tonsillar Region (shown May 2, 1930).¹—MICHAEL VLASTO, F.R.C.S.

Considerable difference of opinion was expressed at the last meeting as to the pathological nature of the condition. Since his last appearance the patient has had seven local applications of deep X-ray therapy, five to the glands of the neck on the right side, one directly on the ulcerated surface and one to the glands on the left side of the neck. He has also been taking 45 grains of potassium iodide daily for three weeks. Members will note that there is a marked increase in the extent of the disease.

The pathologist reported that the growth was a naso-pharyngeal sarcoma.

[The papers read at the Summer Meeting will be published in the next issue of the *Proceedings*.]

¹ *Proceedings*, 1930, xxiii, 1153 (Sect. Laryn., 47).

Section of Neurology.

CLINICAL MEETING AT THE HOSPITAL FOR EPILEPSY AND PARALYSIS, MAIDA VALE, LONDON, APRIL 10, 1930.

Frequently Recurring Attacks of Transient Spasticity in ? Disseminated Sclerosis.—WILFRED HARRIS, M.D.

Male, aged 40. For about twelve months has been subject to attacks of stiffness and weakness of lower extremities, making walking difficult and unsteady, lasting only a few minutes and recurring more or less daily. He has had occasional diplopia for 2½ years, and there is some hesitation of the bladder. Well-marked nystagmus. All deep reflexes, including those of forearms and jaw are very brisk, but plantars are flexor, even during attacks of spasticity. No other physical signs.

Cerebral Tumour. ? Angioma.—W. RUSSELL BRAIN, M.D.

L. H., female, aged 46.

History of Illness.—Seven years ago began to suffer from feelings of faintness, and three years later, from noises in the head described as "like a train passing." Four years ago had a convulsion, and previous to admission had had seven fits; the last two occurred six weeks before admission, and was followed by prolonged lethargy with double incontinence. Headaches have occurred since the onset. No previous illness. Married; two children, both well; no miscarriages.

Condition on Admission, November 11, 1929.—Mentally retarded. Fundi normal. The only abnormal physical sign was bilateral weakness, with exaggerated tendon reflexes and bilateral extensor plantar responses. Since admission she has had five generalized epileptiform attacks, after which she has been stuporose for several days. After the last two fits, January 9, 1930, the grasp reflex was elicited with ease from both hands, more easily from right than from left. This gradually diminished in intensity and can now be elicited on right side only, occasionally.

Present Condition.—Right-handed woman. No dysphasia. Mentally somewhat retarded. Face rather expressionless. General attitude one of moderate flexion. Fundi, visual fields, pupillary reflexes and ocular movements normal. Bilateral weakness of face, tongue, and limbs; more marked on left than on right. Slight hypertonia, especially on left. Tendon reflexes exaggerated, left brisker than right. Bilateral extensor plantar responses. Slight postural loss in fingers of left hand; otherwise no sensory abnormality. Blood-count normal; Wassermann reaction negative. Cerebrospinal fluid: normal; Wassermann reaction negative. Skiagrams of skull show area of calcification in fronto-parietal region nearer right side than left. No bruit on auscultation of skull. Blood-pressure: 126/90. Heart, lungs, abdomen, and urine: normal.

Hemiplegia with Athetosis following Diphtheria.—W. G. WYLLIE, M.D.

I. D., a girl, aged 15, in November, 1918, had a severe attack of naso-pharyngeal diphtheria. On the nineteenth day palatal paralysis developed; on the twenty-ninth, right facial paresis; on the thirty-second, right-sided hemiplegia; on the thirty-ninth, a pharyngeal paralysis; on the sixty-second, a squint. The case was also complicated by scattered petechial hæmorrhages on the tenth day.

In March, 1919, athetosis of the right limbs was first noticed and the left leg was also said to be weak.

In 1921 the patient had a second attack of diphtheria, which apparently made no change in her condition.

By 1928 contractures of the right leg were so severe that she was unable to walk and required tenotomies to enable her to do so.

Spontaneous Subarachnoid Hæmorrhage.—W. G. WYLLIE, M.D.

Male, aged 45, commercial traveller. One week before admission (March 7, 1930) was found unconscious in the bath. He recovered in an hour and was well for

two days. Five days before admission his speech became incoherent. On the following day the right arm became limp, then the face on that side became paralysed, and later the leg.

On Admission.—Comatose. Complete hemiplegia right side with extensor plantar reflexes. No hæmorrhages in ocular fundi. Blood-pressure 120/70. Cerebrospinal fluid evenly blood-stained and under pressure. Wassermann reaction negative. No obvious cardiac disease.

Rapid improvement has occurred. Some difficulty in finding words persists.

Family History.—Father died suddenly from "sunstroke."

Spontaneous Subarachnoid Hæmorrhage.—W. G. WYLLIE, M.D.

A girl, aged 7. Three weeks before admission (March 27, 1930) had acute febrile illness, diagnosed as "influenza"; remained in bed seven days. Three days before admission vomited, complained of headache, was drowsy and irritable; her eyes "turned out."

On Admission.—Afebrile, very drowsy; seldom responded to questions. Both pupils dilated and inactive to light; fundi showed large subhyaloid hæmorrhages on both sides; left external rectus palsy; marked rigidity of neck and bilateral Kernig's sign; knee- and ankle-jerks not obtained; plantar reflexes flexor. Cerebrospinal fluid under great pressure and heavily blood-stained.

Relapsing Polyneuritis.—DESMOND CURRAN, M.B.

G. R., female, aged 17. First admitted June 26, 1929. Two months previously first noticed a weakness of arms and hands, which spread, in about ten days' time, to trunk and legs and was progressive until one week before admission. No pain, paræsthesia or muscle tenderness. Eyes and sphincters unaffected. No difficulty in swallowing.

History of "influenza" (in bed one day only) six weeks before onset. Complete recovery. Past health exceptionally good.

Condition on Admission.—Arms hung flaccidly by side, fingers flexed. Very little voluntary power. Able to move supported elbow feebly, and flex—though not extend—wrist and fingers. Very little movement at shoulder. Unable to raise arm or feed herself. Both arms hypotonic. Tendon reflexes absent.

Trunk and legs showed generalized weakness. Legs hypotonic. Tendon reflexes absent. Plantars flexor. Gait feeble, high stepping. Unable to walk or stand without support.

Sensation everywhere unaffected. Electrical reactions: fair faradic response in all muscles.

Discharged September 27, 1929, considerably improved. Progress continued until Christmas; she was able then to get out of bed and dress and feed herself, and could walk for about a quarter of an hour without support.

Soon after Christmas legs suddenly gave way and she fell. Previous weakness denied. Became completely helpless. No pyrexia.

Re-admitted January 18, 1930, unable to move limbs, raise head or shrug shoulders and had some difficulty in swallowing. Severe knife-like pains, especially in arms. Diaphragm unaffected. Generalized muscular wasting and limbs hypotonic. Tendon reflexes absent. Sensation unimpaired.

Since admission, slight recovery in legs; can move thumbs, shrug shoulders and raise head. Recti stronger. Difficulty in swallowing gone.

Electrical reactions: fair faradic response in all muscles.

Had tonsillitis in hospital last summer, and sore throat since re-admission. No other attacks. Tonsils now much enlarged.

Cerebral Tumour: for Localization.—P. F. CLUVER, M.B.

D. W., female, aged 17. For two years liable to "fainting attacks," preceded by giddiness and headache, occurring once every three or four weeks and continuing

until present time. For eighteen months has been lacking in life and interest, for six months noticeably more "slow in uptake." During past year has gained $1\frac{1}{2}$ st. in weight. For six months has had severe attacks of pain in occipital region, radiating down neck, made worse by coughing and sneezing. For same period has been unsteady in gait, tending to fall to left; on account of this unsteadiness she was brought to hospital. It is becoming worse.

For six months, at least, she has on occasion seen an object "turn double" when she has looked at it for some time. Three months' precipitancy of micturition, with occasional accidents; (?) in addition polyuria. Once or twice has been sick when headaches were bad.

Past History.—Always healthy. Did well at school. Has never menstruated.

On admission March 17, 1930.—Full-faced girl with good colour. Slight fullness of thyroid. Mentally rather dull. Head $22\frac{1}{2}$ in.

No anosmia. Pupils large, equal, react to light and accommodation. Discs show slight atrophy with blurred edges on right side. Visual fields full. Vision, right $\frac{6}{18}$, left $\frac{6}{18}$. Convergence poor. Coarse nystagmus, on lateral deviation, slower to left than right. Motor system normal except for doubtful dysidiadochokinesia of left arm.

Gait ataxic with marked tendency to fall to left. Partial Rombergism.

Reflexes normal, except that corneals are sluggish, more so on left side; left upper abdominal response rather sluggish.

Other systems normal. Urine: no abnormal constituents; no polyuria since admission.

Pathological Reports.—Cerebrospinal fluid normal; Wassermann reaction negative. Blood-sugar tolerance within normal limits.

Skigram.—Marked changes in the skull due to pressure. Considerable thinning of the bones, especially on the left side. Most changes in the middle fossa.

Flaccid Paralysis of Legs, ? Cause.—M. M. POSEL, M.B.

Female, aged 54. Gradual onset, during last two years, of weakness of legs. Unable to walk since December, 1929. Never any pain or paræsthesia. Arms quite strong. No sphincter involvement.

Past History.—Always healthy; teetotaller.

Present Condition.—Fat woman; complete flaccid paralysis of both legs with bilateral foot-drop. Feeble attempt at flexion of right knee possible. Left thigh 2 in. above patella 1 in. thinner than right. Tendon reflexes absent. Plantar response absent. No sensory loss, no fibrillary tremors. No tenderness of muscles. Nothing abnormal in pelvis. Wassermann reaction (blood and cerebrospinal fluid) negative. Total protein (cerebrospinal fluid) 0.030%.

Electrical reactions of muscles: Response to faradism absent in anterior tibial groups on both sides. Response to galvanism: absent in anterior tibial groups of right leg, present in left leg.

Hypertrophic Polyneuritis.—W. RITCHIE RUSSELL, M.B.

W. I., male, aged 38. Admitted to the National Hospital under Dr. Kinnier Wilson, March 24, 1930.

History.—Patient was quite healthy as a small boy, and was able to play football and other games. Pes cavus developed gradually when he was 14. It was associated with some awkwardness in walking, which has persisted ever since without progressing appreciably. Wasting of the right hand was first noticed four months ago. There have been no subjective sensory phenomena of any sort.

Family History.—Father, aged 67, alive and well; mother, aged 65, has had weakness of feet since age of 15, and weakness of hands since age of 40, with some arthritis of fingers; now hardly able to walk. Has bilateral paralytic pes equinovarus, and advanced arthropathy of both knee-joints. There is considerable weakness and atrophy of the small muscles of both hands, but there is also arthritis of the metacarpophalangeal articulations. Pupils react sluggishly to light, and tendon reflexes are all absent.

One sister, aged 42, shows, on examination, a condition very similar to that of the patient, except that enlargement of the peripheral nerves is not definite, and the pupils react sluggishly to light, the left being also a little irregular in outline. Two sisters and one brother are quite normal. A daughter of patient's mother's brother is said to have a similar condition.

Condition on Examination.—Pupillary reactions normal. Fine horizontal nystagmus on looking to right and left (not constant).

Marked wasting of all small muscles of right hand. Some wasting of muscles of left hand. Bilateral pes cavus with weakness and atrophy of dorsiflexors of feet, especially on right side. Some fibrillation in forearms.

Considerable enlargement of all peripheral nerves; course of some cutaneous nerves of forearms actually visible through skin; great auricular and cervical cutaneous nerves palpable. Enlargement of median nerves well felt in cubital fossæ. Nerves are not tender and present a slightly irregular surface on palpation.

Tendon reflexes all absent. Abdominal reflexes weak; plantar responses both extensor. No demonstrable sensory loss; no increase of muscle tenderness. Soles of feet very sensitive. Wassermann reaction negative in the blood.

It is hoped that sections of the median cutaneous nerve of the forearm can be shown.

Muscular Atrophy and Graves' Disease.—HUGH G. GARLAND, M.D.

A. K., male, aged 36, admitted to the National Hospital, Queen Square, on February 7, 1930, under Dr. Macdonald Critchley.

History.—Rheumatic fever at age of 9, and was said to have hip disease. Remembers no other illnesses. No family history of Graves' disease. Is sure that right hand has been weak since he was 6 years old, and on this account was unable to write until age of 11 and has always used his left hand except for writing. Joined Army in 1915 and served in France; discharged on account of weakness of right hand. In 1920 was vaccinated and had a severe reaction. Had diarrhoea on one occasion during the war. Prominence of eyes first noticed about 1920. He was treated with iodine in 1926, and from that time until 1928 had X-ray treatment on several occasions. Throughout the illness there has been dyspnoea on exertion, and during the past year a great deal of vomiting. There has also been diplopia on looking to left, and frontal headache. Patient says that right foot has been "dropped" all his life; he does not think that weakness of right arm and leg are increasing.

On Examination.—An intelligent man of moderate height and considerably under weight. Visual acuity good. Optic discs normal. An advanced degree of proptosis; the palpebral fissures are equal; pupils equal and rather large; reaction to light normal; reaction on accommodation brisk but not always sustained; a few nystagmoid jerks on looking to left. Diplopia on looking upwards, downwards and to left. Frequently "skew-deviation," left eye being turned slightly out and down, and right upwards and inwards. Right eye frequently fails in convergence. No spontaneous blinking; some blepharoclonus on closing lids. Well-marked "lagging" of eyelids on looking down. Tongue protruded straight, but shows fine rapid tremor and well-marked "notching" by teeth along both sides.

A great deal of muscular wasting in arms, most particularly of right deltoid and small muscles of both hands, especially on thenar side. Supra- and infra-clavicular fossæ prominent; some "winging" of the scapulæ. Unable to hold arms above head; weakness of movement at right elbow; considerable weakness of grip, especially on right. Rapid tremor of outstretched hands. Well-marked hypotonia in arms with some increase in tremor on making voluntary movements. Well-marked fibrillation in all arm muscles.

Right foot slightly dropped and dorsiflexion extremely weak. Other leg movements rather weak, but of full range, and hypotonic. Feet dragged but no

ataxia. Some impairment of pain and vibration sensibility over right leg. Biceps and supinator jerks very sluggish, triceps jerks brisk. Abdominal reflexes present. Knee- and ankle-jerks brisk. Plantar responses flexor.

Blood-pressure on admission 134/76 mm. Thyroid gland only slightly enlarged. Pulse-rate 128.

Muscles of right hand show sluggish response to galvanism; response to faradism is obtained. Muscles of left arm and forearm show normal reactions. Left hand shows partial reaction of degeneration in ulnar muscles and complete reaction of degeneration in median intrinsic muscles (Dr. L. W. Bailey).

Cerebrospinal fluid normal. Wassermann reaction negative.

Resting blood-sugar 0.088%. Blood-sugar rises to 0.257% in sixty minutes after ingestion of glucose. Blood-count normal. Basal metabolic rate + 23%.

Treatment has consisted of rest and Lugol's iodine. Palpitation is now less marked and the average pulse-rate is 100.

A biopsy has been made on the right deltoid.

Athetosis Associated with Presence of a Calcified Mass in Region of Body of Opposite Lateral Ventricle.—D. DENNY-BROWN, M.B.

R. S., a boy aged 9, admitted to National Hospital, Queen's Square, under Dr. Gordon Holmes, in March, 1930, on account of continuous spasm of right upper limb and right ankle and "convulsions."

Family History.—Mother, father, one brother and three sisters all alive and well. A sister and a maternal uncle died from tuberculosis; no other history of tuberculosis and no history of epilepsy.

History of Present Condition.—Normal delivery. Began to walk and talk at normal age and was apparently perfectly healthy up to age of 1 year and 8 months, when right hand became clenched, and within ten days right arm was stiffly held, with hand tightly clenched; was able to walk and it was not until two months later that right foot was noticed to drag a little in walking; very soon he could not put his heel to the ground. Spasm of foot and arm remained continuous, but during the next eighteen months he had almost daily spasms of pain in these limbs, lasting some hours and relieved by massage to limbs. No febrile illness associated with the onset.

At age of 4 had a convulsive attack while asleep, with twitching of right arm and leg and right side of face for three hours, with complete recovery after deep sleep. Face was asymmetrical for two or three days after this attack and then became normal. Spasm of hand and leg remained the same, and at age of 5 tenotomy of right tendo Achillis was performed. While in hospital for this he had a second fit, again limited to right side, and a week afterwards a third similar fit.

Continued to drag foot. Has attended school up to the present time. No speech

Two years ago found he could hold hand less tightly clenched for short periods; defect at any time. Has learned to write his name with his left hand.

during last two years has been able to unclench hand by passively flexing wrist and to keep it open for short periods. When open it undergoes slow movements over which he has little control; he cannot close it suddenly except by placing a finger of the other hand in the right palm.

No defect in the other left limb at any time. No pains or other sensory disturbance since the age of 3. Vision always good.

A fortnight before admission had another series of convulsions in which twitching of whole right side of body occurred continuously for twenty-four hours, never extending to left side. Apparently unconscious during all this time. Recovery complete after a sleep; right arm and leg remain as before.

Physical Examination.—Bright, intelligent child; no affection of speech; no defect in memory. Visual acuity $\frac{6}{18}$ right and $\frac{3}{9}$ left. No field defect. No fundus

changes. Right pupil slightly larger than left, and reaction to light not so well held as in left pupil. Slight weakness of right lower face, most noticeable in emotional expression. No other abnormality found in cranial nerves. Left upper and lower limbs normal in all respects. Right upper limb held loosely with fingers lightly flexed when no attention is directed to it and when the patient is quiet. Any movement or effort causes a spasm in right upper limb and right foot. Most common posture assumed is adduction of upper arm, flexion of elbow and tightly clenched fist. From this posture is able to open hand by prolonged effort, or more quickly by passively flexing wrist. Once open, fingers undergo alternating slow athetoid movements, and hand can be closed only after prolonged effort, or by passively dorsiflexing wrist and introducing some object into palm. No true grasp reflex, but stimulation of palm assists closure of hand. Elbow often hyper-extended in course of efforts to close or open fist. Slow associated movements occur in right limb when forceful movements are made with left. No tremor; no atrophy. Tone increased in all muscle-groups in limb, and muscle-groups determining the posture at any moment are in greater tonic contraction. In right lower limb, foot is held in pes cavus and movements of great toe are the only evidence of spasms affecting upper limb. Adduction of right thigh, weak; dorsiflexion and eversion of ankle, absent. Tone evenly increased in all muscle-groups in this limb. Tendon reflexes all present. Abdominal reflexes present on both sides but more easily fatigued on right. Right plantar response extensor; left, flexor. No defect in sensation of any kind could be appreciated.

Cerebrospinal fluid: pressure 140 mm., fluid clear, colourless, no cells seen, total protein 0.025%; globulin tests negative; Lange, no change in any tube; Wassermann reaction, negative. Blood: Wassermann reaction, negative. Temperature normal.

Skiagram of skull reveals calcified spheroidal mass in region of body of left lateral ventricle, overlying posterior part of thalamus.

Suprasellar Endothelioma (?)—P. F. CLUVER, M.B.

Female, aged 41, single. August, 1929, was hit on head by broom. Left eye became swollen. Dates complete blindness in left eye from this episode. For six weeks has suffered from frontal headaches. No vomiting. No nausea. Walking unsteady, especially on turning to left. Thinks she has gained in weight lately. No polyuria or polydipsia. Menses normal. Past health good.

On Examination.—Plump woman. Tends to be sleepy. Pupils equal; right reacts normally, left, consensual reaction only. Movements full. Right, 3 D. swelling. Left, secondary optic atrophy. Vision: Right, $\frac{6}{12}$; left, nil. Field: right temporal hemianopia.

Otherwise examination completely negative, except for plantar reflexes, which give bilateral extensor responses by Oppenheimer's method, although flexor on plantar stimulation. Gait appears to be normal. Urine, negative.

Results of X-ray examination, Wassermann test, and examination of cerebrospinal fluid, not yet available.

Muscular Dystrophy with Amyotonia.—M. M. POSEL, M.B.

Patient, a boy, aged 8. At age of 10 months was said to have rickets. Between ages of 10 and 18 months attempted to walk, but fell frequently. Since age of 18 months, gait progressively worse; is now unable to walk unaided.

Only child. No acute illnesses. Labour normal. No family history of similar disease.

Intelligent. Thin arms, trunk and face. Buttocks and calves only show somewhat prominent musculature. Pectorals and latissimus dorsi normal. Power very poor, worse in lower limbs than in upper. Joints lax; hands can be dorsiflexed until fingers touch back of forearm. Tendon reflexes not obtained. "Climbs on thighs" with difficulty on attempting to rise from supine to erect position.

Section of Psychiatry.

[May 13, 1930.]

Psychiatry in Relation to Biography and History.

By HUBERT J. NORMAN, M.B.

THE increasing tendency to specialization in medicine is apt at times unduly to restrict our outlook, so that we do not observe how widespread is the range of an apparently limited subject, how manifold are its phases, and how interwoven it is with other matters, political, historical and sociological. It may be profitable, therefore, to call attention once again to a particular aspect of the matter, namely, the elucidation of psychiatric problems in biography and history. It is an aspect which has not received, or did not formerly receive, as much attention in this country as in France, from psychiatrists and historians. One of the first, if not actually the first, of medical writers to apply the methods of morbid psychology in this way was a distinguished alienist, Lélut (1804-1877), whose monograph on the "Demon of Socrates" appeared in 1836. Lélut maintained that Socrates and other men of genius must be judged by the same rules by which ordinary individuals are judged, and that, when this is done, it becomes clear that there were times when they were mentally disordered. As may well be imagined these iconoclastic statements evoked a storm of criticism, but Lélut did not recant. Nearly twenty years later, when writing the preface to the second edition of the "Demon of Socrates," he recalls the words of Galileo (*eppur si muove*), and says that he has seen no reason to alter his opinion as to the essential accuracy of his earlier statements. Yet, as he remarks, epigrammatically, "actual truth is not admitted truth": and that *obiter dictum* is surely just as applicable to-day.

It is almost a truism nowadays to state that this so-called familiar spirit of Socrates is to be explained by the fact that Socrates suffered from auditory hallucinations, and that, to this extent, he was certainly mentally disordered. As so many people thought then—and as many people still think—that an individual must be definitely either sane or insane, responsible or irresponsible, this was equivalent to saying that Socrates was insane. As, further, it was evident from the records which his pupils, Plato and Xenophon, have left of his teaching and of his general conduct, that he was one of the wisest and most lovable of men, such an allegation could not but give rise to offence. All the more because the implications of Lélut's teachings were clear, and it was seen that other idols would now be measured by the same rule. Some years later Lélut himself wrote a similar monograph on another man of genius, Pascal¹: and he dealt also with the case of Jerome Cardan, the sixteenth century physician and scientist, who believed that he had a familiar spirit, but said that his was good and compassionate, whilst the familiars of others, excepting Socrates, were demons.²

¹ "L'Amulette de Pascal."

² Lélut, "Le Démon de Socrate," p. 225. 2nd edition. Paris, 1856.

Another distinguished French alienist, Brierre de Boismont (1798-1881), published his very able and learned work "On Hallucinations" in 1845. Although he adduced many instances of hallucinations occurring in famous individuals, he was not inclined to go as far as Lélut in regarding them as indubitable signs of mental disorder—though he does speak of Lélut as one who "may justly be regarded as at the head of that school which has proclaimed the intervention of physiology in history." De Boismont's attitude may be understood from the following quotations. "The facts of psychology," he says, "differ from those of physiology; each of them is governed by separate laws. If their mysterious union establishes certain points of contact, still their nature is distinct: the one is impalpable, the other tangible." Again, "But the senses are not the only sources of our ideas; there are others which originate in the soul itself, or are derived from God; these are general notions, ideas pure, which cannot be imagined and cannot become the subjects of hallucinations"; and, finally, "All our arguments are especially intended to show that these illustrious persons were the impersonation of an epoch, of some special idea; that they fulfilled some useful and necessary mission, and that their hallucinations were altogether different from those which are observed in the present day."³ (He refers here to Loyola, Luther and Joan of Arc.)

In the same way he drew a distinction "in favour of those apparitions which have been recorded in Scripture." It may be admitted that such distinctions justified the criticism levelled at him of being an eclectic, for such differentiation seems to leave the way open to deciding entirely in accordance with personal predilection. It is not a method that would have appealed to one at least of his medical predecessors, La Mettrie, who was an uncompromising materialist. His works, "The Natural History of the Soul" (1746) and "Man a Machine" (1748), incurred so much obloquy that he had to flee first to Holland and later to the friendly territory of Frederick the Great—whom it was difficult to shock by any display of scepticism and who was soon to entertain the almost equally sceptical Voltaire. Though it may be that La Mettrie was unduly dogmatic, he did bring sound common sense to bear upon problems which were then—and have been since—treated far too much from an abstract point of view. La Mettrie was in the tradition of Bacon, as may be gathered from the following quotation: "Experiments and observation alone ought to guide us here. These we find in abundance in the writings of such physicians as were philosophers, and not in those philosophers who were unacquainted with physic. The former have explored and unravelled the labyrinth of Man. They alone have discovered to us those hidden springs concealed under a cover which hides from us so many wonders. They alone, in a philosophical contemplation of the soul, have a thousand times surprised it in its misery and grandeur; without despising it in one of these conditions or idolizing it in the other. Once more, I will be bold to say, these are the only authors that have a right to speak on this subject. What would other lame philosophers say, and above all, the divines? Is it not ridiculous to hear them determine without modesty on a subject they have never been qualified to examine thoroughly? A subject from which they have been always diverted by dark idle studies that have tintured them with a thousand gross, childish prejudices, and to say all in one word, have plunged them over head and ears in fanaticism, which adds still to their ignorance in the mechanism of bodies."⁴ This is plain speaking, and little wonder is it that he had to flee the country! Yet there were others who felt that the time had arrived when an endeavour had to be made to shake themselves free from the

³ "On Hallucinations: A History and Explanation of Apparitions, Visions, Dreams, etc.," by A. Brierre de Boismont. Translated by Robert T. Hulme. London, 1859. Pp. 4, 15, 262.

⁴ "Man a Machine," by M. de la Mettrie. (English Translation. London, 1753, p. 5.)

trammels of a hide-bound tradition. Diderot and his collaborators were busy with the production of their great Encyclopædia, the first volume of which appeared in 1751. There can, too, be little doubt that the ideas of Descartes had a far-reaching effect. To him, man and the lower animals were automata, though in the case of man there was super-added a mind or soul; and discretion alone prevented him from carrying his system to those conclusions which later thinkers found inevitable. The Church—especially as represented by the Jesuits—was then very powerful; and, indeed, the works of Descartes were placed on the Roman Index.⁵

To return to La Mettrie: "It is true," he says, "that melancholy, bile, phlegm, blood, etc., according to the nature, quantity, and different mixture of these humours, not only produce differences in different men, but also render every individual different from what he was, before particular changes were induced in his fluids."

"In diseases the soul is sometimes as it were eclipsed, and shows no sign of existence: sometimes one would say it was doubled, so far does passion transport it; sometimes its weakness vanishes, and a fool by the recovery of health, becomes a man of sense. Sometimes the noblest genius in the world sinks into stupidity and never after recovers. Farewell, then, to all those noble acquisitions of learning obtained with so much labour!"

In another passage he asks: "What was it that could change the intrepidity of Caius Julius, Seneca and Petronius into pusillanimity and cowardice? An obstruction in the spleen, the liver, or some disorder in the *vena porta*. Why? Because the imagination is disorder'd at the same time as the entrails, and hence arise all the different surprising phenomena of the hysteric and hypochondriac affections. . . . *A nothing, a minute fibre, something too subtle for the nicest anatomy*, would have made two dunces of Erasmus and Fontenelle, as the latter himself observes in one of his most ingenious dialogues."⁶

La Mettrie mentions the effects of food, heredity, environment, climate and education on the individual and consequently on conduct. Our virtues and our vices are the outcome of our constitution. "I cannot help thinking," he says, "that man is sufficiently punished, who has had the misfortune not to be born virtuous": and speaking of certain criminals whose misdeeds appeared to him to be consequent upon mental disorder: "Of these women one of them was broke on the wheel and burnt, and another was bury'd alive. I am sensible that the interest of society requires all this rigour. But, however, it is much to be wish'd that we had none for judges but the most skilful physicians. They alone could distinguish the guilty from the innocent. If reason is the slave of depraved, or distracted sense, how then can it be expected that at that time it should be governor?" We have advanced some way towards that desirable consummation, it may be admitted; but it can scarcely be said that we have arrived.

La Mettrie also mentions the case of Pascal—"If men are thus rack'd with the remembrance of their guilt, what occasion is there then to confound weak understandings and startle their imagination with the notions of hell, apparitions, and precipices of fire, that have less reality in them than those of Pascal." Of Pascal, it is noted that, "Either in company, or at table, he used always to have a kind of fence made of chairs, or some body close to his left hand, to hinder him from seeing the frightful abysses, into which he was sometimes afraid of falling, notwithstanding he knew perfectly well that this was all an illusion. What a frightful effect of the

⁵ "In Search of the Soul," by Bernard Hollander, M.D. Vol. i, p. 153.

⁶ La Mettrie. *Op. cit.*, pp. 7, 8 and 19.

imagination, or of a singular circulation in a lobe of the brain! As great a man as he was on the one hand, on the other he was half a fool."⁷

It will be granted that La Mettrie had the root of the matter in him: and it may be that, in an age permitting greater liberty of expression, he would have still further expanded his doctrines. It is to be reckoned to his credit that he should have noted—and given reasons for his belief—that intellectual deterioration follows bodily enfeeblement, and have thence drawn the inference that thought is a result or product of organic processes. It is curious to observe that the fanatical Marat, himself an interesting psychiatric study, was a caustic critic of La Mettrie.⁸

Littré, physician and philologist, his pupil, Brachet, also distinguished as a philologist, Ernest Renan, Taine and Michelet, were among those who realized the value of the application of medical knowledge in this respect. Michelet laid great stress on material factors. For example, in writing of Louis XIV—and adopting the phrase of an earlier historian—he divides his life-history into the periods "before and after the fistula"; and modifies the famous formula "L'Etat, c'est moi" as "L'Etat, c'est mon poulx et mon ventre!"⁹ The same rationalistic spirit is exemplified in his study of the witchcraft delusion, entitled "The Sorceress."¹⁰

Taine was, according to Cabanès, "one of the first, if not actually the first, of historians who attempted to apply clinical methods to History": from his early days he was interested in the study of physiology, anatomy, and, above all, of mental pathology, which he studied at the Salpêtrière, under Baillarger. Taine himself says that between psychology, as he conceives it, and "history as it is now written, the relationship is very close. For history is applied psychology, psychology as applied to more complex cases. The historian notes and traces the total transformations presented by a particular human molecule or group of human molecules, and, to explain these transformations, writes the psychology of the molecule or group; Carlyle has written that of Cromwell; Sainte-Beuve that of Port Royal; Stendahl has made twenty attempts on that of the Italians; M. Renan has given us that of the Semitic race. Every perspicacious and philosophical historian labours at that of a man, an epoch, a people, or a race; the researches of linguists, mythologists and ethnographers have no other aim; the task is invariably the description of a human mind, or of the characteristics common to a group of human minds."¹¹ There will be found in Taine's volume numerous references to morbid psychology; and he refers to the hallucinations of Socrates, Tasso, Luther, Blake, Bunyan and of Théophile Gautier.¹²

Littré tells us that he spent ten years in the hospitals, but did not gain any medical degree. He had to give up these studies because of the death of his father, which entailed upon him not only the necessity of earning his own living, but also of providing for his mother. But he never lost his interest in medical matters: he was able to apply this knowledge to good effect when dealing with certain historical problems, and, what particularly interests us here, to shed the light of reason and of science on such products of ignorance, superstition, or mental disorder, as the dancing manias, spiritualism, witchcraft and sorcery.¹³

⁷ La Mettrie. *Op. cit.*, pp. 43-44.

Note.—I have quoted rather extensively from La Mettrie, not only because of the interest of what he says, but also because, I imagine, he is little known and his writings are not easy of access. One final quotation may be permitted: "Fish have big heads, indeed, but void of sense; as are the heads of a greater part of mankind!"

⁸ "L'Histoire Éclairée par la Clinique," Dr. Cabanès. (Paris, n.d.).

⁹ Cabanès. *Op. cit.*, pp. 179 and 182.

¹⁰ "The Sorceress," by Jules Michelet. Translated by Alfred Allinson. (Paris: 1904.)

¹¹ "On Intelligence," by H. Taine. (Translated by T. D. Haye.) London, 1871, p. xi.

¹² Taine. *Op. cit.*, pp. 373, *et seq.*

¹³ "Médecine et Médecins," by E. Littré. (Paris, 1872).

Brachet, without the specialized training of Littré, was nevertheless a worthy disciple—certainly as far as industry and zeal were concerned. His interest in mental pathology and morbid heredity is well exemplified in his great work on the "Mental Pathology of the Kings of France," dealing with Louis XI and his ancestors through six centuries.¹⁴

Another masterly work is that entitled "De la Folie" by Dr. Calmeil, formerly physician at Charenton, published in 1845. Starting from the fifteenth century he brings his study down to the period when mesmerism was rife, just prior to the time of the French Revolution. He, too, shows quite clearly how many unfortunate mad folk were put to death in various ways: "Visionaries," people who were said to be possessed by, or women who cohabited with, demons, others who stated that they had eaten human flesh, lycanthropes, or those who were supposed to turn into wolves, etc.¹⁵

In our own time the tradition of Lélut and Littré has been most admirably maintained by one writer whose name must inevitably be mentioned in this connection. This is Dr. Cabanès, who, with indomitable energy, has explored so many of the medical by-ways of history. A mere list of his writings would occupy much space; it amounts to some forty volumes and forms quite an encyclopædia of interesting information. Napoleon, Marat, Balzac, Tasso, Calvin, Gilles de Rais (sadist and prototype of Blue-Beard), mental disorder in kings and rulers, such as Emperor Charles V, Don Carlos, and others of the Spanish Monarchy, the Romanovs, tho Hohenzollerns and the Wittelsbachs—these are but a few of the topics with which he has dealt.

Pride of place has been given to these French writers because it is from them that the movement for a more rational and scientific consideration of such matters has received its chief impetus. It is to be remembered, however, that the school of English philosophy has had much—and admitted—influence upon French thought; and, indeed, upon thought elsewhere as well. Instead of the vagueness of the Scholastics, and in place of systems built up for the most part of phraseology, Bacon wished to build a fabric of human knowledge on "Experience or perception through induction."¹⁶ This was bound to lead to scepticism in so far as many of the old beliefs were concerned, in much the same way that the philosophic doubt of Montaigne did. That such scepticism was necessary no reasonable or thoughtful person will deny—though others may. As Hume says in speaking of miracles—"We soon learn that there is nothing mysterious or supernatural in the case, but that all proceeds from the usual propensity of mankind towards the marvellous, and that, though this inclination may at intervals receive a check from sense and learning, it can never be thoroughly extirpated from human nature."¹⁷

It was to be expected that the movement initiated by the French School would not long have to wait for followers in England and elsewhere. Mention should be made of the valuable work on mental disorders¹⁸ by Griesinger, which appeared in 1845, and in which he dealt with them from a rational (physiological and pathological), as opposed to a metaphysical, point of view. One biographer speaks of him as "the pioneer in the development of medical psychology."¹⁹ Griesinger was, however, more concerned with the explanation of mental disorders than in the

¹⁴ "Pathologie mentale des Rois de France: Louis XI et ses Ascendants," by Auguste Brachet. (Paris, 1903.)

¹⁵ "De la Folie, considérée sous le point de vue pathologique, philosophique, historique et judiciaire," by Dr. L. F. Calmeil. (Paris and London, 1845.)

¹⁶ Tennemann's "History of Philosophy." London, 1873, p. 286.

¹⁷ "Essay on Miracles," by David Hume.

¹⁸ "Mental Pathology and Therapeutics," by W. Griesinger, M.D. (New Sydenham Society, London, 1867.)

¹⁹ "History of Medicine," by David A. Gorton, M.D. (New York, 1910, p. 333).

application of the knowledge thus gained to cognate matters. Not that he overlooked these, but that he touched upon them incidentally.

There were two writers in England who did concern themselves quite definitely with this particular matter. These were Dr. W. H. Ireland and Dr. Henry Maudsley. In Dr. Ireland's two books, "The Blot on the Brain" and "Through the Ivory Gate," there is much interesting information, dealing, in particular, with the Insanity of Power, as manifested, for example, in the Claudian-Julian line (Julius Caesar, Tiberius, Caligula, Nero) and in Ivan the Terrible (who well-merited the cognomen). Of Dr. Maudsley's writings special mention should, in this connection, be made of his "Natural Causes and Supernatural Seemings." The title gives a quite definite indication of the doctrine which he set out to teach. Dr. Maudsley says that "an attack on supernaturalism, however absolute, is not an attack on religion," for "systems of theology are one thing, religion is another thing"; but, so far, it has not been possible to separate them, as is demonstrated by the fact that attacks on supernaturalism and superstition are apt to be regarded as attacks on religion, so closely are they inter-related. It is easy to understand what Dr. Maudsley had in mind, but one fears there is little likelihood that his eminently reasonable opinion will soon meet with general acceptance. Indeed, he was bitterly attacked for his, so-called, anti-Christian teaching.²⁰ Was it probable that a scientific thinker who approximated the visions and "voices" of prophets, seers, and founders of religions, to those of the mentally disordered, could be popular with the enthusiasts and the true-believers who regarded these phenomena as an integral part of their various systems of belief?

To many it may seem that this subject is of merely academic interest and of no practical value. It is stated of the present age—and, so far as one can judge of previous ages—that it has no interest in anything which has not a strict utilitarian value. The statement is no more true now than it was formerly. The multitudes who visit cinemas, theatres, race-meetings, football matches, and so on, are sufficient to confute this. Despite the cynics, it is easy to prove that such things have a definite value, at any rate up to a point.²¹ From the purely academic point of view, however, there is the surpassing interest of searching for the actual causes of phenomena, following one's refusal to force facts into line with ill-founded theories. The pursuit of truth is of itself a pleasant thing. We may enjoy the hard-fought game we lose more than the victory achieved too easily; in any case we probably learn more from it.

It has been said that history repeats itself. This is never so, but similarity of conditions may make it appear as though such repetition occurs. That being so, and comparing conditions at a given time with those of the past we may learn what course it is wise to follow and what errors to avoid. In this we are further helped by reflecting that, through the annals of recorded history, there appears to have been no change in human nature, or, if any, the change is so little as to be, from a practical point of view, negligible.²² We still flatter ourselves,

²⁰ See, for example, "Christian Psychology," by T. M. Gorman, M.A. (London, 1875).

²¹ It is so easy to sneer and to adopt a "superior" attitude towards these that I hasten to disclaim any such implication. It was the same in classic times when "bread and circuses" were the topic. On the other hand, there is the great difference between use and abuse. "What virtue is there which, carried to excess, does not become a vice." (Maudsley.)

²² In one of his "Dialogues"—between Socrates and Montaigne—Fontenelle makes Montaigne say that men "are like birds, caught in the very same snares wherein have been taken a hundred thousand more of their species. There is no one who does not enter life wholly new, the stupidities of the father are not the least use to their children." Montaigne goes on to say that "man degenerates." Whereto Socrates answers: "Be on your guard . . . man elevates the men of old time to abase his contemporaries. When we lived we overestimated our forebears, and now our posterity esteems us more than our due, and quite rightly. I think the world would be very tedious if one saw it with perfect precision, for it is always the same." And later he adds: "Clothes change, but that does not mean a change in the shape of the body . . . the heart does not change and man is all in the heart." (Translation by Ezra Pound, London, 1917.)

as did our forebears in the distant days of Plato and Aristotle, that our acts are dominated by reason and that intellect and "will" are our prime movers, whereas the truth would seem to be that it is the emotions which are predominant.²³

Not only this, but one individual differs from another only in degree and not in kind. So trained are we to hero-worship that we are apt to regard our heroes as supermen, or as being in some way supernormal. It is a shock to us when we find that they, too, have their frailties and their foibles, that even our gods have feet of clay. But, if "to understand all means to pardon all," the knowing is worth while; for, while our veneration may be tempered, our human sympathies are evoked. Nor need we admire great qualities the less because here and there we find some alloy. It may be that, as with precious metals, a base admixture gives stay and reinforcement for its particular purpose. Now, it is these imperfections, or alloys, which historians and biographers are often incapable of appreciating at their proper value, owing to bias or wrong preconceptions, or through lack of specialized knowledge. Let us take a specific example. Were Joan of Arc's visions and voices divine or diabolic? The opinion of many contemporary scholars, clerical and lay, was that she was a trafficker with the devil—and she was burned as a witch. Political bias may have had a good deal to do with the decision, but the belief was there nevertheless. Then, after many years come the rehabilitation and the canonization. Will the time come when this in turn will be reversed? On the shifting sands of opinion no solid or lasting structure of truth can be based. Even in those days there were people, though they were few in number, who realized that there was no need to invoke the supernatural to account for these phenomena. But, unless they were unusually brave or foolhardy, they kept their opinions discreetly to themselves. Stake and faggot were, for the individual, unanswerable arguments!

Even though they themselves be not competent to weigh the evidence in these matters, biographers and historians are apt to resent what they regard as the impertinent intrusion of others, better qualified. It is a curious trait in human nature in this respect that, though it will permit, or even welcome, a diagnosis of physical disease suffered by some famous person, it is a different matter when the disorder is mental. This would seem to arise from two considerations. First, that in deciding upon a question of insanity, lay and medical opinions are of equal value—a view that seems implicit in the law. This does not apply to any extent to cases coming within the layman's more intimate personal knowledge—if the patient be a worry or burden to him, for then he is glad to invoke expert assistance. Secondly, there is the underlying fear of insanity and the insane, which is, maybe, instinctive, but which has not been diminished by Christian tradition.

These criticisms do not, of course, apply to all historians or to all biographers. There are notable exceptions: for example, Lecky, author of the "History of Rationalism," "History of European Morals," etc., Lytton Strachey and others. But instances will occur to the minds of most people where the writing of history has been coloured by prejudice or by party feeling.

It may seem hypercritical to comment thus on writers who have shown such painstaking industry, but the criticism really is in respect of certain sins of omission—the more flagrant because of their usually vital significance. It may be frankly admitted that a person who should seek to deal adequately with the subject would need to be almost omniscient—historian, biographer, physiologist and psychiatrist rolled into one! He would have to go back to the sources—search archives, read diaries, autobiographies, anything and everything that might possibly throw light on the subject. This brings us to the consideration of what it is wise or necessary to include in volumes of reminiscences, biographies, etc. The complaint is often made that writers dwell too much on irrelevant details, trivialities,

²³ "The driving power of this human progress, individual or social, proceeds not, nor ever has proceeded, from the intellect." (Maudsley.)

scandals, tittle-tattle, and the complaint is largely justified. Even so, it too often happens that items of information, apparently trivial, though really important, are omitted. Again and again we experience the same thing in our daily practice! Yet it is this attention to details which renders the works of writers such as Plutarch and Suetonius so invaluable to us now. It was Plutarch's express purpose to delineate character; had he been alive to limn for us the features of Cromwell, he would not have forgotten to paint in the warts! We could afford to sacrifice a good many historical works in order to possess the "Lives of the Twelve Cæsars." As Montaigne says, the true way to understand men of great reputation would be to know how they behaved at home and not at the head of their armies: and Bacon—"A man's nature is best perceived in privateness, for there is no affectation; in passion, for that putteth a man out of his precepts: and in a new case or experiment, for there custom leaveth him."²⁴

It is to be remembered that events are important to us as human beings only in as far as they relate to individuals, and as influencing the course of human life, however much we may try to obscure this fact. To quote Bacon once more: "Individuals are the object of history"; or, as Carlyle put it, "History is a collection of biographies."

Yet the biographer's lot is not a happy one in certain respects. If he tells all the truth about contemporaries he may render himself liable to actions for libel, or to prosecution for indecency! Nevertheless, the facts should be given somehow, though only a change in public opinion in the direction of a reasonable appreciation of scientific needs will make their presentation generally possible. Meantime, for the most part, we continue to suffer from unnecessary frankness in fiction and undue reticence in fact.

Incidental references have been made to some of the practical applications of psychiatric methods, but some amplification of these will serve more fully to demonstrate their utility and interest. One of the most gloomy chapters in history is that which deals with witchcraft and sorcery. The Christian conception—or adoption—of the idea of the Devil, or Prince of Darkness, and the general tendency to attribute everything unexplained, and apparently inexplicable, to supernatural agencies, tended to foster other irrational conceptions.²⁵ If there was a Devil, it was a logical sequence that there would be compacts with him by people who wished to avail themselves of his maleficent powers. This delusion was not, of course, necessarily an insane one; and, indeed, there were many people who else were of high intellectual degree, yet who did, nevertheless, hold with these childish superstitions. Sir Thomas Browne is a good example; he could write on "Vulgar Errors" and yet be unable to disabuse his mind of this particular one. We need not be surprised at this when we consider our own time. As witches were in the air—the expression may be permitted as a not inappropriate one—the belief was certain to be adopted by the insane and by the half-mad; and they, in their turn, were regarded as outcasts and criminals when they admitted that they had made compacts with the Devil, had attended the Witches' Sabbath, and so on. Hallucinations of sight, hearing, smell, or of the muscular sense, hysteria, catalepsy, somnambulism and nightmare, gave rise in the individual to the belief that strange things had been happening to him. When we add to this a little torture still further to upset the mental balance, there is no wonder that the learned gentlemen who made lengthy records of their examinations of these poor creatures had some amazing details to pass on to posterity.²⁶ So prevalent and firmly rooted were these beliefs

²⁴ Essays. "Of Nature in Men."

²⁵ "Witchcraft was clearly kept alive by theology. People who really believed in a personal devil . . . could easily accept tales of familiar spirits." "A History of Penal Methods," by Geo. Ives, M.A., p. 68 (London, 1914).

²⁶ Those who wish confirmation of this will find it in such books as "Malleus Maleficarum," Guazzo's "Compendium Maleficarum," Bogue's "Examen of Witchcraft," Remy's "Demonolatrie." (These are, now, for the first time, available in English translations, edited by the Rev. Montague Summers and published by John Rodker.)

that it is not less amazing that rational and scientific opinions could ever overcome them. It does seem, however, that there must be some powerful urge in human nature, or in some parts of it, towards the light of truth. The greatest gain in this respect was when freedom of discussion was achieved, or happened. Yet that stage had not been reached when people like John Wier,²⁷ a medical man and physician to the Duke of Cleves, boldly brought his knowledge to bear on the gross credulities displayed in the "*Malleus Maleficarum*" and wrote his "*De præstigiis dæmonum*" (1563); and when Reginald Scot carried on the work of enlightenment in his "*Discoverie of Witchcraft*" (1584). For King James I was an upholder of tradition in this respect, as may be gathered from a perusal of his "*Daemonologie*" (1597) and from the fact that he promulgated a law against witchcraft. He attacked both Wier and Scot; while the scholarly Bodin also bitterly criticised Wier in his "*Démonomanie des Sorciers*" (1580). In spite of the forces against it scepticism was not extinguished—fortunately for the victims of "belief."²⁸

Consideration of the treatment meted out to witches brings recognition of the fact that increasing knowledge of morbid mental processes must lead to a change of view in regard to matters criminal. If many of the so-called witches were really mentally disordered and deluded, or, at least, eccentric, it followed that they could not fitly be treated as dangerous criminals, as had been the case in many instances. It began gradually to be realized that insanity was more multiplex than had been imagined when it was sufficient to speak of "possession," or something of the kind, and leave it at that. So it came about that the state of mind of the criminal was more studied; though progress in this direction has been slow because of the difficulty in arriving at any reasonable conception of what that "mind" is! The desire to cling to the doctrine of the absolute freedom of the will was and still is undoubtedly an obstacle. Yet it is good to know that, in practice, it is more and more accepted that a variety of factors can and do vitiate, or impair, this freedom and, consequently, the responsibility of the individual for his actions. It is possible, therefore, that some of those who were dealt with as criminals in olden times would now be regarded as being ill-balanced or definitely insane. For example, Ravallac, who stabbed Henry IV; Jacques Clément, who assassinated Henry III; Damiens, who attempted to kill Louis XV, and who was made to undergo such atrocious tortures that Michelet said he provided the most striking example for physiology of what a man could suffer without dying!

Recognition of the symptoms of mental disorder and means of dealing adequately with the sufferers might sometimes have diverted the course of world events. History does show that it is not wise for individuals to have unbridled power. If they are fairly stable mentally they may be able to withstand the dangers which autocracy implies: if not, the consequences may be disastrous. Insanity, often enough troublesome in the private individual, may be a menace or be attended by horrific results in the case of the tyrant and the despot. Examples of this were easy to adduce: and it will be sufficient to mention the names of Nero, Tiberius, Caligula, Ivan the Terrible, Peter the Great. Revolutions, also, seem inevitably to bring to the surface mad fanatics, sadists, alcoholics, who, in their turn, become responsible for the worst excesses: without such opportunities they might have lived comparatively innocuous lives.

Bodily disorders of all kinds have their inevitable reverberations in the nervous system and, therefore, on mental processes. How far, then, are these responsible

²⁷ Wier was probably influenced by the teachings of Henry Cornelius Agrippa, of Nettesheim, whose "*De Vanitate, etc.*" ("*Of the Vanity of the Arts and Sciences*") was published in 1529.

²⁸ It is to be remembered that there was wickedness as well as insanity. A number of the accused did doubtless indulge in nefarious practices, and were impostors, purveyors of poisons, and were evil-livers and evil-doers, but we are concerned here with those unfortunates who were mentally disordered.

for alterations in conduct? There are, at least, two aspects from which this problem must be considered—the disease and the temperament or constitution of the sufferer. Judge Jeffreys, of unenviable notoriety, suffered from vesical calculus. Partly, perhaps, to assuage his sufferings in this respect he drank heavily. Would his life-history not have been very different if he had had proper treatment? Calvin, again, suffered from stone, which fact may well have influenced his theological outlook. Henry VIII was syphilitic; so was Francis I of France. As contrasted cases of individuals suffering from the same disease—phthisis—we may consider Robert Louis Stevenson and D. H. Lawrence. In the former there were optimism, urbanity, delight in the thought of high adventure, a predilection for the objective side of life—in a word he was, it may be hazarded, an individual whom Jung would describe as an extravert. In the case of D. H. Lawrence there would appear to be an almost opposite tendency—to excessive introspection, to dwell unduly upon sex until it seemed to become an obsession, toward pessimism and a misanthropic attitude—rather, indeed, like Swift, who finally passed over the borderland into insanity. There was a rather similar tendency to dwell on the morbid and gloomy in the case of the Brontë sisters, in whose family tuberculosis was very prevalent. It would be an easy matter to add examples to such a list, but it is unnecessary here.²⁹ The fact to be remembered in these, as in other cases, is the influence of bodily disorders upon character and conduct. It is impossible airily to dismiss them as irrelevant and unimportant. Anyone who is inclined to do so would do well to remember what his outlook upon the world was while suffering from sea-sickness, “biliousness,” hæmorrhoids, influenza, or colic! La Mettrie certainly understood their significance. He instances a magistrate in Switzerland who was, “when fasting, the most upright and merciful judge; but woe to the wretch who came before him when he had made a hearty dinner. He was then disposed to hang everybody, the innocent as well as the guilty.”³⁰

The day for disbelief in “vulgar errors” has not yet dawned: nor does it seem as if that day will ever come—if one may judge from current events and beliefs. If we have almost got rid of superstitious ideas regarding witchcraft and demoniacal possession we still have spiritualism.

Whatever truth there may be in the spiritualistic conceptions there is no doubt that they are accompanied by much trickery, fraud even, and, what interests us here, great emotional instability, which does, not infrequently, pass on into definite mental disorder. The “spirit voices” may then be auditory hallucinations. It is necessary to remember this when reading accounts of those with well-developed “mediumistic” powers. As Dr. Mercier pointed out, there is just as much—or as little—cause for believing in witchcraft as in spiritualism,³¹ and he called attention once again to the aphorism enunciated by William of Occam some six hundred years ago, that “Miracle is not to be presumed until natural causes have been excluded.”

Although a considerable amount of critical and explanatory work has already been accomplished—what has been said here will, it is hoped, make this plain—there still remains much to be done. Even where it is admitted that mental disease was present in some individual, it is none the less interesting to endeavour to decide precisely what was the particular disorder from which he or she suffered. In the case of William Blake, the painter and poet, there does not appear to be any doubt that he was of the manic-depressive type,³² and the same may be said of Friedrich Nietzsche.³³ William Cowper, the poet, may be included in this

²⁹ Those who would like to pursue the matter further, may read with profit the following: “Post Mortem” and “Mere Mortals,” by C. MacLaurin, M.B., F.R.C.S.Ed., and the “Biographic Clinics,” by George M. Gould, M.D.

³⁰ La Mettrie. *Op. cit.*, p. 12.

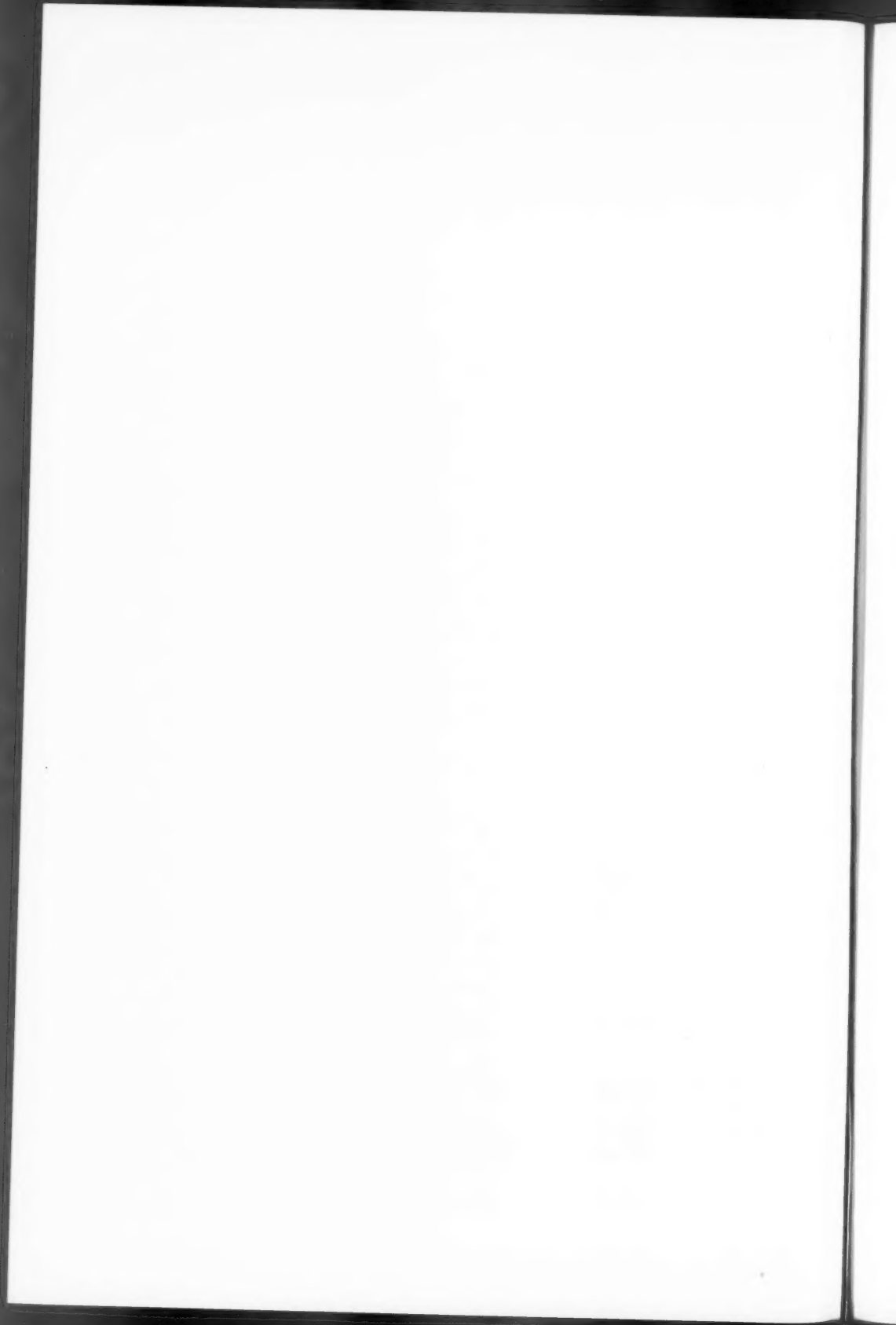
³¹ See his “Spiritualism and Sir Oliver Lodge” (London.)

³² See, for example, my essay on Blake in the *Journal of Mental Science*, April, 1915.

³³ Friedrich Nietzsche, *Journal of Mental Science*, January, 1915.

category, though he seemed to be rather an example of recurrent melancholia, with suicidal impulses, and there were no well-marked manic phases corresponding in any degree with the depressive one. August Strindberg, novelist and dramatist, is an interesting case for study, and much valuable autobiographical material is to be found in his writings. But the range of the subject is vast, and, indeed, it is difficult, the more one studies it, to see who is to be excluded rather than who is to be included! When we realize that much of the best, or, at any rate, the most impressive work in the world is the product of individuals in a state of unstable nervous equilibrium, it is not difficult to conceive that there may be times in their lives when the balance tends to become upset, and when they may even be definitely disordered mentally.³⁴ It is not a question of them all being insane—or even of becoming insane at any particular time—but there may be, as Mercier so frequently pointed out, mental disorder without definite, or “certifiable,” insanity. To describe some of these individuals it may be better to employ the term suggested by Landouzy, of “disharmonies,” or persons who are out of harmony with their social conditions, temporarily, it may be. It is obviously more fitting to apply such a term to such individuals as Socrates, Luther, Pascal, Descartes, Mahomet and Bunyan. Often only a fine line exists between their disorders and actual insanity: it is a question of degree. The mistake which is made is to impute the disorder to some supernatural or preternatural cause. For this there is no warrant. It would not be done by anyone who could apply an adequate knowledge of mental disorders to the problems under consideration.

³⁴ See “The Man of Genius,” by C. Lombroso (London, 1891). “The Insanity of Genius,” by J. F. Nisbet. New edition, with Preface by Bernard Hollander, M.D. (London, 1912.) “The Great Abnormals,” by Theo. B. Hyslop, M.D. (London, 1925.)



Section of Ophthalmology.

[June 13, 1930.]

An Experiment in Keratoplasty.

By J. W. TUDOR THOMAS, M.D., M.S.

IN June, 1926, after four years of experimental work on corneal transplantation, the results were so poor that it seemed hardly possible to obtain the clear corneal grafts which I afterwards obtained, and which were demonstrated at the Jubilee Meeting of the Ophthalmological Society in April of this year.

The experimental operation which forms the basis of this paper was performed with the object of determining whether the retention of a very minute pedicle of corneal tissue would be sufficient to enable the graft to maintain its transparency.

An incision was made in the cornea of a rabbit, in the form of a rectangle, penetrating the whole thickness of the cornea, but retaining at the posterior superior corner a pedicle two millimetres in diameter.

The sides of the rectangle measured $7\frac{1}{2}$ by 4 mm., and its position was across the centre of the cornea. The flap was then secured in place with four stitches. The flap united well and in time became transparent with the exception of a marginal scar.

The experiment proved that the retaining of a small pedicle enables the graft to maintain its transparency, although the method of suturing was similar to one which I had tried in corneal transplantation, namely, direct union by sutures of graft to cornea, and which had proved to be detrimental to success in corneal grafting.

The pedicle was only two millimetres wide, and yet this small amount was sufficient to enable the graft to live and to remain transparent. For some time after the operation observations were made in regard to the transparency of the graft and the return of normal sensation. The graft was cloudy for a week, and slightly cloudy at the end of a fortnight. At three weeks the graft was sensitive to touch over an area extending from the two-millimetre pedicle to the posterior $2\frac{1}{2}$ mm. of the inferior margin. The graft at this time was quite clear in the sensitive area, and slightly beyond it, while the rest of the graft was only slightly cloudy.

In a month the graft was quite clear except for the marginal scar. At five weeks sensation had increased by one millimetre, and at thirteen weeks sensation was normal all over, with the exception of a very minute area of about one square millimetre near the middle of the anterior end of the graft.

An analysis of these details shows that it took one month for transparency to be regained, and that the two-millimetre pedicle enabled sufficient nerve impulses to pass to an area of $3\frac{1}{2}$ by $2\frac{1}{2}$ mm. in three weeks. After that time the sensation extended by one millimetre every fortnight, so that the remaining five millimetres of graft regained its sensitivity in seventy days.

The animal was killed two years and four months after the operation, and the microscopical appearances of the cornea are as follows: The graft in general is a little thicker than the rest of the cornea, and Descemet's membrane is at least equal in thickness to the normal membrane, and stains a little deeper. In the main portion of the graft the corneal fibres are regular in outline, and there is no appreciable increase in the number of nuclei.

At the opaque margins of the graft the microscopic appearances show the following changes: The epithelium is thickened; there are six or seven layers of cells, the basal cells being elongated. The stroma contains about twice as many nuclei in this region, and spindle-shaped spaces between the fibres are numerous.

At one margin the graft's Descemet's membrane is seen to pass on as two layers; the posterior layer becomes continuous with the corneal Descemet's membrane, while the anterior layer can be traced quite easily along its tortuous course into the substance of the cornea, terminating in a free end which lies about the junction of the inner and middle thirds of the thickness of the cornea (fig. 1).

Between the free end of the Descemet's membrane in the substance of the cornea and the posterior membrane, the tissue fibres are coarser, and spindle-shaped spaces between the fibres are larger and more numerous; some of these spaces have a nucleus at the side of the space. Some iris pigment can be seen at the site of an anterior synechia which has now separated, and these pigmented cells are covered by a layer of endothelial cells with a new Descemet's membrane.

The two layers of Descemet's membrane referred to appear to unite, near the margin of the graft, to form one membrane. Careful observation, however, shows the

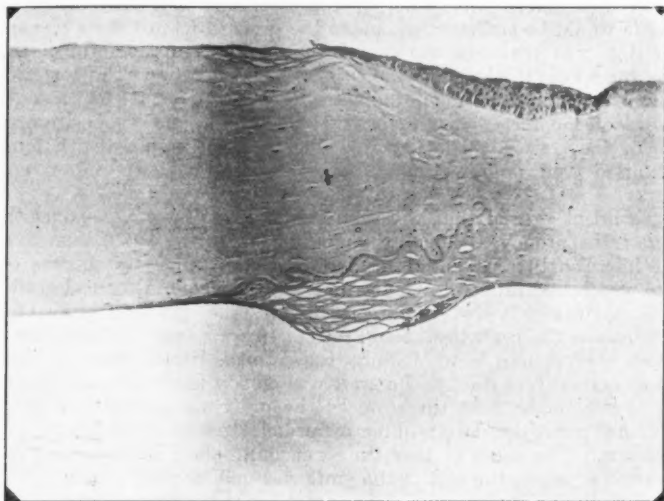


FIG. 1.—One margin of the graft showing persistence of Descemet's membrane in the cornea, and formation of a new membrane. $\times 75$.

presence of a minute split between the two layers, which can be traced in places for the whole breadth of the graft. One section shows the split as a definite large space between the two layers (fig. 2), but this is due to accidental separation in the preparation of the section, as the next section in series does not show any more than a minute split.

At the other margin, the termination of the graft's Descemet's membrane can be seen where the two layers separate. The posterior layer becomes continuous with the corneal Descemet's membrane, while the anterior layer can be seen to terminate in a free end, separated from the posterior layer by one or two corneal fibres. The corneal stroma at this margin also shows numerous spindle-shaped spaces and increase in the number of nuclei.

A small detached portion of Descemet's membrane can be seen curled up in the region of the scar—near the posterior surface, but covered posteriorly by the new membrane (fig. 3). This illustrates the fact that detached portions of Descemet's membrane remain more or less unaltered in the cornea for years.

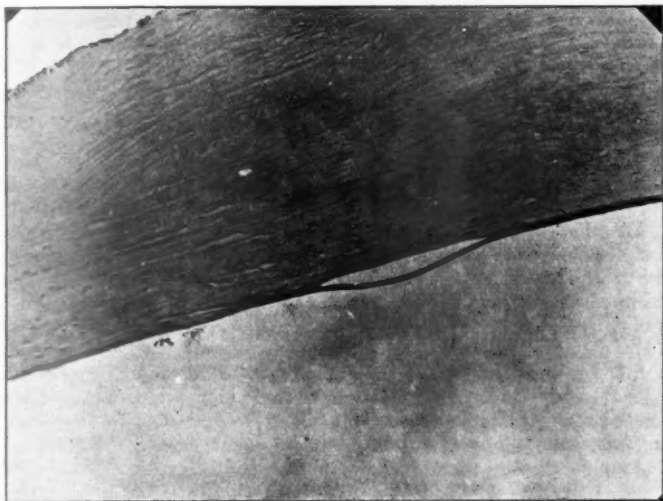


FIG. 2.—Showing the two layers composing Descemet's membrane in the graft. $\times 90$.



FIG. 3.—Showing persistence of small detached portion of Descemet's membrane near the posterior surface of the margin of the graft. $\times 350$.

The microscopic appearances of Descemet's membrane in this case are in accord with the observations of others on the healing of corneal wounds, to the effect that the cut ends of the membrane do not unite, but are joined by a new membrane which is formed, either to unite the cut ends, or, more frequently, to fuse with the posterior surface.

In this case it is apparent that a new membrane has been formed, which passes completely across the graft—that is, four millimetres—and has fused nearly completely with the graft's original Descemet's membrane.

It seems fairly certain, by analogy with the pathology of corneal wounds, that the marginal portion of the new membrane must have been formed by the endothelial cells of the surrounding cornea. It is not possible to tell from this specimen alone whether the initial change in the graft was the loss of its endothelium, with the rapid re-formation of an endothelial layer from the surrounding cornea, or whether the graft's endothelium remained *in situ* and took on new activity.

The specimen shows, at any rate, that a new membrane can be formed, under the conditions of this experiment, over quite a large area, and that it actually covers and fuses with the membrane of the graft. This is in accord with the accepted theory that a new membrane is formed by the endothelial cells, and is incompatible with the view expressed by Weinstein, who thought that the new membrane was composed of differentiated corneal lamellæ.

Speaking generally, this experiment shows what a great difference there is between a complete and an incomplete detachment of a portion of cornea, and how the retention of even a small pedicle of corneal tissue is a material help in re-vitalizing the graft. If this small two-millimetre pedicle had not been retained, my own experience experimentally is, that with the same method of stitching as that employed in this case, the graft would have been opaque, whereas actually it was clear, except for a marginal scar. If this flap had been left without any stitches to secure it, the eye would probably have been useless, and at best a staphylomatous cornea would have resulted.

If a somewhat similar condition were found in man, when an injury had caused a clean, perforating wound of the cornea, possibly horse-shoe shaped, or even a large linear corneal wound, I venture to suggest that corneal suturing might restore a useful eye, which would be unlikely to result if treatment were confined to a pad and bandage, etc., when the result would probably be an extensive adhesion of the iris, with a gaping wound that would necessitate removal of the eye.

The loss of an eye is always more or less an unexpected calamity, and may quite possibly happen to a man who has already lost one eye, so that it is worth while making every effort to save an injured eye if there is a chance of retaining even a little sight, and if it can be done without risk of sympathetic affection.

Small corneal wounds will often unite quite well under the usual treatment, but a large corneal wound tends to gape, the anterior chamber does not re-form, the iris becomes extensively adherent to the wound, and the risk of infection is great.

In the case of clean, incised, and rather extensive corneal wounds, if there is any likelihood of any useful vision remaining, the experiment which I have described leads me to believe that corneal suturing in many cases might be tried instead of removing the eye, and would be likely to give better results than would be obtained by leaving the corneal wound to gape.

Discussion.—The PRESIDENT said that the subject at which Mr. Tudor Thomas had been working was a very important one. Though the results of the research might not appear to be very striking at present, he believed they would be of great value in the future.

Mr. HUMPHREY NEAME said that the section exhibited by Mr. Tudor Thomas, in which a portion of Descemet's membrane was reduplicated, was reminiscent of those seen in eyes which had been the seat of severe interstitial keratitis. He (Mr. Neame) had had such specimens to examine, either because secondary glaucoma had supervened, or because a blind

eye had ruptured. Sections of those eyes showed a thick new formation of fibrous tissue behind the remains of the old cornea, similar in appearance to that now shown on the screen, with the obviously ruptured Descemet's membrane curled up in much the same manner and lying at the middle depth of the existing cornea. That new fibrous tissue was generally thickest and most obvious in the lower part of the cornea, and his assumption was that this was due partly to gravity. In an eye extremely inflamed with interstitial keratitis there was a considerable formation of cellular material in the anterior chamber, and there was a tendency for this material to accumulate in the lower part. He had sections obtained a few years ago of a portion of an eye which was in an active state of interstitial keratitis. In the lower part of the anterior chamber, quite a thick layer of granulation tissue was present. This would presumably have become fibrous tissue if the eye had remained *in situ*. The thick layer was laid down in lamellae, with remnants of Descemet's membrane behind. In such cases, besides considerable necrosis of cornea, the endothelium itself suffered and disappeared, and then the raw surface on the back of the cornea was repaired by a formation of new fibrous tissue, and a covering of endothelium spreading in from the periphery.

Mr. J. H. FISHER said it did not seem to him that in this case the endothelium had spread in from the periphery to cover the posterior surface of the graft and secrete a new deposit of hyaline material. All the other tissues of the graft appeared to have survived well, and he saw no reason why, in such an experiment as Mr. Tudor Thomas had carried out, the endothelial cells on the posterior surface of the graft should not also retain their vitality. Under the abnormal conditions in which they existed, those cells might produce excessive hyaline secretion sufficient to form the duplicated membrane, just as the epithelial cells on the surface of the graft had hypertrophied and were, apparently, more active than the normal epithelial cells. He thought it was not an ingrowing of endothelial cells from the periphery, but a survival of the cells on the deep surface of the graft which, under the abnormal conditions, had taken on an excessive activity and produced a second layer of secretion.

Mr. MAURICE H. WHITING said that the practical value of Mr. Tudor Thomas's experiment consisted, as he himself had said, in the possibility that it suggested of the repair of wounds of the cornea. But when a cornea was wounded by accident in ordinary life it was probably not in the same favourable condition as in an experiment of the kind Mr. Tudor Thomas had been carrying out. Accidental wounds were often inflicted with some blunt instrument, and considerable injury was done to the edges of the flap and to the main part of the cornea; in addition, the element of infection always entered into the case.

During the European war he (the speaker) had come across many cases of extensive corneal wound, and often both eyes were injured. It was of paramount importance to try to preserve them. And, though his technique was probably less delicate than that of Mr. Tudor Thomas, he had attempted on some occasions to suture the cornea flap wounds. The results, however, had been unsatisfactory; in fact he concluded that the additional injury inflicted by the attempted suture was detrimental to the flap instead of resulting in a fixation of the edges of the wound. After having tried this in a few cases, he ceased attempts to suture, and relied on the less complicated and apparently more satisfactory pad and bandage to keep the flap in position. Conjunctival flaps, he thought, were undesirable, for other reasons.

Colonel A. E. J. LISTER said he must speak a word in favour of conjunctival flaps. He had had two cases of the kind described, in which he had made conjunctival flaps and both the patients had done well.

Mr. TUDOR THOMAS (in reply) said that Mr. Fisher had raised the question as to whether the original endothelium survived in the corneal flap; that question the speaker was unable to answer, and he did not know how anything could be proved on the point, one way or the other. He thought it likely that the endothelium survived.

As Mr. Whiting had said, corneal wounds were frequently caused by comparatively blunt instruments, and such wounds were often infected. Sometimes, however, the wounds were plain incised ones, and it was for that type of case that suturing might be useful.

The conjunctival flap was probably useful, but, comparing the surgery of the eye with general surgery, one should aim at properly closing the wound, and he thought the cornea,

especially that of the rabbit, tolerated stitches very well if they were not inserted right through the cornea but only through about half its thickness. In the case of one patient he had sutured up an extensive corneal wound; the patient could not see more than the difference between light or dark with that eye, because so much intra-ocular damage was caused by the accident. It was so extensive a wound that in the ordinary way the eye would have been removed; the wound extended across the cornea and on to the sclera, and was gaping. It had healed well, and the man retained his eye.

Section of Otology.

[May 2, 1930, continued.]

The Surgical Treatment of Otosclerosis.

By MAURICE SOURDILLE

(Assistant Professor of Surgery at the School of Medicine, Nantes).

I TOOK up the study of the surgical treatment of otosclerosis six years ago, after a visit to Professors G. Holmgren, of Stockholm, and R. Bárány, of Upsala, whose researches had attracted my attention for some time previously. It was not until much later that the important contribution to the subject made by one of your Members—Mr. G. J. Jenkins—came to my knowledge. As a matter of fact, as far back as 1913, Mr. Jenkins had conceived an operative technique which, but for a few details, may be considered as very near the object which we propose to attain. I beg to be excused for not having mentioned it in my first publications. If, without knowing it, I have arrived at a solution very near that of Mr. Jenkins, I want to acknowledge that the priority is his. My experience, so far, is limited to six cases completed, and thirteen others in course of treatment, but it is already possible to conclude from these cases useful facts.

A few months ago I had occasion to present, first in Paris, at the Académie de Médecine and the Société de Laryngologie des Hôpitaux, later in Brussels, at the Institut du Cinquantenaire, in a private meeting that I owe to the kindness of my colleague and friend, Dr. Ledoux, the operative technique which I have finally adopted and which I shall now describe. To-day, I should like, after a rapid résumé of the principal facts contained in this technique, to insist more particularly on certain points which may seem, nevertheless, obscure. I should like also to try to convince you of the necessity of following this study and to show that we already possess certain important elements for directing our researches.

After the anathema thrown on all surgical treatment of otosclerosis by Professor Siebenmann at the International Congress of Otology in Rome in 1894, one must be thankful to Dr. Jenkins and to Drs. Bárány and Holmgren for having taken up the question on a new basis and for having clearly shown that the opening of the labyrinth could result in hearing. Although, for diverse reasons, the advantages derived from these operations were not lasting, and admitting that they were of an exceptional nature, they constituted, nevertheless, a solid basis for new investigations.

Basing my procedure on these operations, I have endeavoured to confirm and, if possible improve, certain important points and I have arrived at a technique which requires a double operation.

The first operation is destined to explore the middle ear and to isolate it. It is an attico-tympanotomy, simple, or combined with an internal plastic with a tympanic hinge. The second operation aseptically opens the canalis semicircularis externus and occludes this fenestration by a thin epidermic membrane.

Both these operations must be done under local anæsthesia and with strong adrenalization.

I will now briefly indicate the principal points of the technique.

Attico-tympanotomy requires the following steps.—(1) mastoid trepanation and a very careful elevation of the soft parts of the external auditory canal from the bone (fig. 1). (2) Mobilization of the tympanic membrane, only in the upper half of its circumference, with the cutaneous lining of the external auditory canal (fig. 2). (3) A resection of the "osseous bridge" of the external wall of the attic, and of the tympanic ring, corresponding to the portion of the tympanic membrane mobilized. One obtains thus a large view of the attic, the tympanic cavity and the ossicles. This is what is called simple attico-tympanotomy, and permits the exploration of the fenestra ovalis and the lesions of the ossicles (fig. 3). (4) Removal of the corpus incudis with or without resection of the caput mallei: this constitutes what is called "combined atticotympanotomy" (figs. 4 and 5). (5) Internal plastic, with tympanic hinge: the flap is obtained from the postero-superior wall of the membranous canal and is lowered inwardly against the internal wall of the attic. By its adherence to this wall the tympanic cavity is hermetically closed and separated from the mastoid region (fig. 6).

The post-operative treatment consists in dressings continued until the epidermization of the mastoid cavity.

The trepanation of the prominence of the external semicircular canal is performed a few months later, when the cicatricial lining of the mastoid cavity is sufficiently thin and transparent. This necessitates the following steps:—

(1) Re-opening of the retro-auricular wound: a tracing and cutting out of the cicatricial flap that is destined to cover the region of the semicircular canal. The tympanic cavity should not be opened (fig. 7). (2) Trepanation, by rubbing with special rubbers, of the prominence of the external semicircular canal (fig. 8). (3) Placing of the epidermic flap on the orifice of labyrinthine fenestration, thus closing it, and preventing any infection of the internal ear. This flap is maintained by paraffined gauze applied to it up to the time of cicatrization of the entire mastoid cavity.

In order to answer many objections which have been raised by some of my friends I desire to explain the object and utility of these two operations.

Regarding the first operation, the attico-tympanotomy, it has been objected that it is useless. That is not my opinion. I perform it for two reasons: for the sake of caution and for study.

For the sake of caution: I have already said that in the surgical treatment of otosclerosis we are only at the very beginning and great caution must necessarily be exercised. Now, by reason of the inflammatory reaction which may follow the opening of the tympanic cavity, one must not open the labyrinth immediately, as the latter runs the risk of infection and all eventual success would be compromised. The previous exclusion of the tympanic cavity constitutes then, for the moment at least, an obligatory measure of caution.

For study: I confess that in taking up the surgery of otosclerosis, I had few directions save for the opening of the prominence of the external semicircular canal. The nature and extent of the ossicular lesions are impossible to foresee before an exploratory operation; the rôle of the altered ossicles seemed uncertain, they might even disturb the hearing in a case of total ankylosis of the chain, a thing which is not rare. On the other hand, the closing of the tympanic cavity and its exclusion by the plastic flap are greatly facilitated by the resection of the external wall of the attic, the removal of the corpus incudis and the division of the caput mallei. I wished then to see the functional results that could be obtained by combining different operations on the ossicles. This important point, of great interest, is so complex that I have been as yet unable to form an opinion as to what I should do, and hence I am continuing my research work. Finally, when I have shown the difficulties encountered in the preparation of the plastic epidermic strip which must re-cover the labyrinthine trepanation, the necessity of a long and vigilant watch

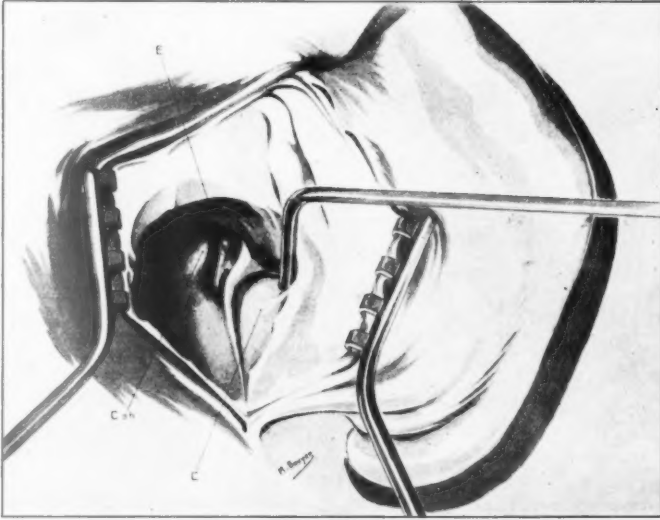


FIG. 1.—Mastoid trepanation and a very careful elevation of the soft parts of the membranous external auditory canal from the bone.

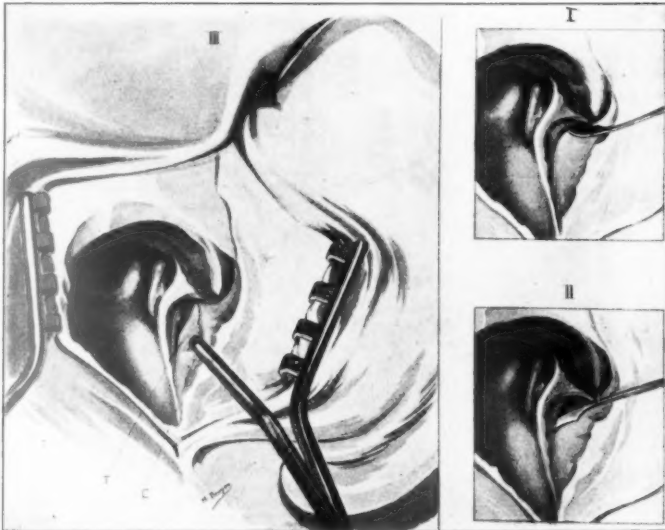


FIG. 2.—Mobilization of the tympanic membrane.

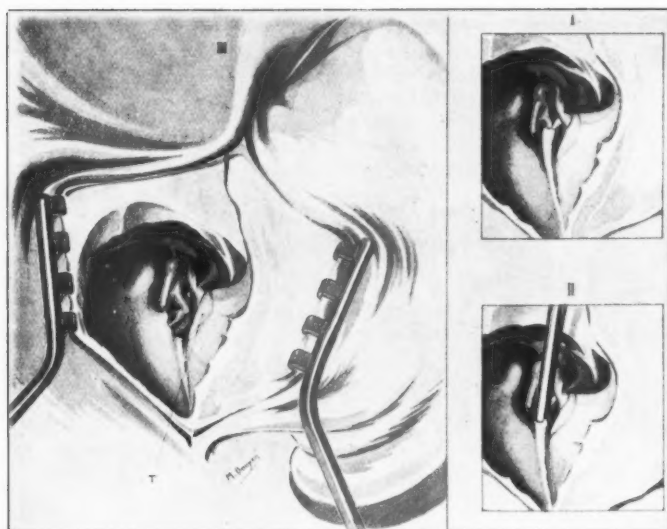


FIG. 3.—Simple attico-tympanotomy. Exploration of the tympanic cavity and of its contents; chain of ossicles. (T) Tympanic membrane.

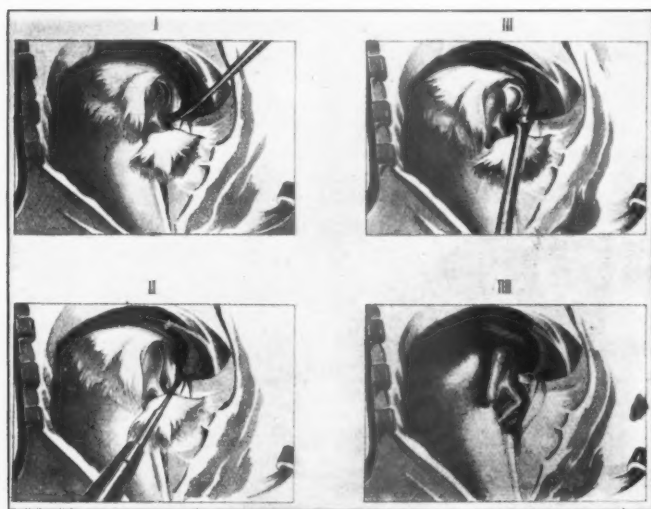


FIG. 4.—Resection of the caput mallei with conservation of the corpus incudis articulated with the stapes.

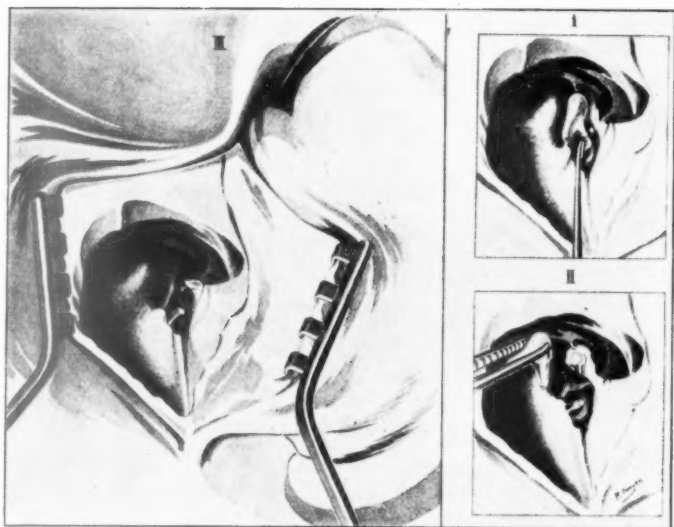


FIG. 5.—Combined attico-tympanotomy; removal of the corpus incudis and resection of the caput mallei.

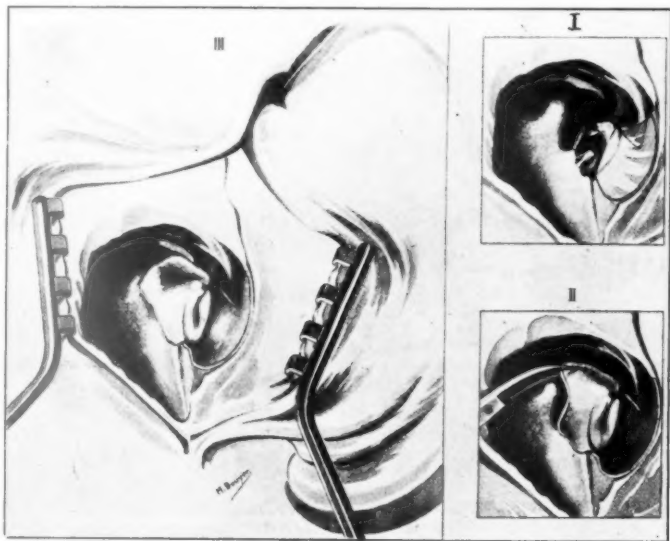


FIG. 6.—Internal plastic: (I) Tracing of the flap on the postero-superior wall of the membranous external auditory canal. (II) Measuring the flap. (III) Replacement of the tympanic membrane and application of the flap, thus closing the tympanic cavity upwards and inwards.

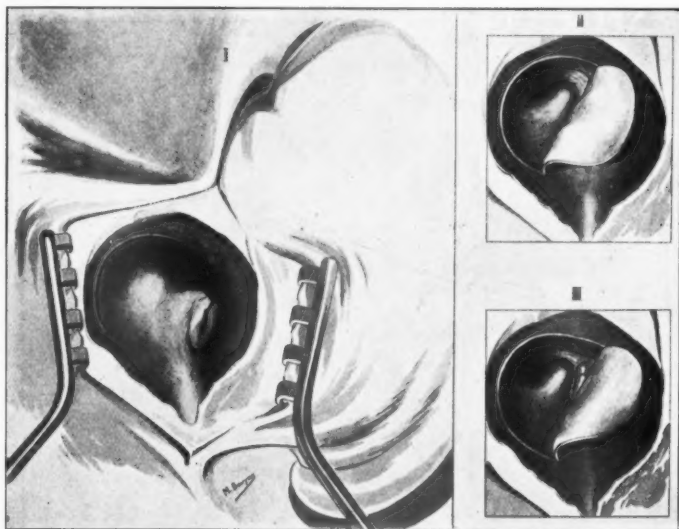


FIG. 7.—Mastoid cavity epidermized after retro-auricular incision ; tracing and cutting out of the cicatricial flap.

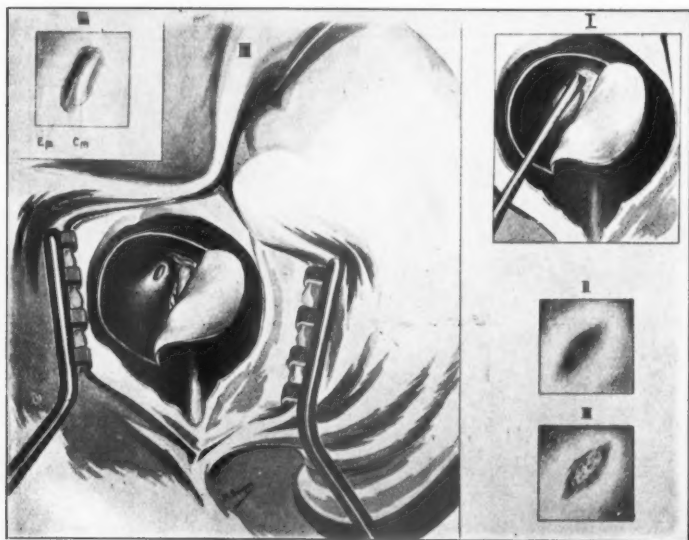


FIG. 8.—Trepanation of the prominence of the external semicircular canal. (I) The attack on the bony surface with the author's special rubbers. (II) The cavity of the semicircular canal is seen through a very thin transparent bony lamella. (III) Sub-total trepanation with conservation of flaps of bony lamellæ and internal epithelium. (III) Total trepanation without conservation of the bony lamellæ or internal epithelium. (III inset) Details of the orifice of labyrinthine fenestration (magnified 20 diameters). (Ep) Perilymphatic field. (Cm) Membranous semicircular canal.

of its evolution, and its important rôle for the hearing, it will easily be understood that this first part of the method constitutes such an important and delicate stage as to be worthy of a pause.

Regarding the second-stage operation, the extra-tympanic trepanation of the posterior labyrinth, I should like to insist on the three following points:—

(1) It is necessary to open the prominence of the *canalis semicircularis externus* in preference to any other region of the labyrinth, for the double reason that it offers itself to the perforating instrument, and that by its situation having become superficial and extra-tympanic, it is easy to cover it with a protecting epidermic flap.

(2) It is necessary to open the labyrinth, not by perforation with a burr, which is brutal and does not obtain a surface sufficiently even, but by slow and progressive rubbing of the bone with special rubbers, of which I exhibited two models on December 17, 1929, at the Société de Laryngologie des Hôpitaux de Paris, and of which the radius of curvature can evidently be modified to suit oneself. This trepanation by rubbing is one of the important points of my method. It is the best way to avoid injuring the membranous labyrinth and to conserve the epithelium which lines the interior of the osseous semicircular canal.

(3) The epidermic flap which must cover the orifice of trepanation is of such importance that all the success of the operation depends on it. I want to discuss it simply from the point of view of its histological structure. This piece is a cicatricial product: it is constituted by the granular tissue which rapidly lines the cavity of the mastoid trepanation and on which lies a thin layer of epidermis. Normally this strip, rather thick in the earlier stages, becomes gradually thinner to a point when, a few months later, it is like a thin transparent layer of conjunctival membrane, adapting itself exactly to the subjacent osseous support. It therefore appeared to me to be the ideal cover to be applied on the orifice of labyrinthine trepanation. Applying itself by its bleeding surface to the osseous margin of this orifice, it prevents the budding of the bone and the production of osseous or fibrous tissue which would fill it. Unfortunately, this cicatricial flap, like any cicatrix, presents many anomalies; I have observed three principal anomalies; (1) retraction, (2) keloid, and (3) secondary ulceration.

(1) Retraction has a double consequence: (a) It diminishes the surface utilized by the piece and after the second-stage operation, leaves a large osseous wound in the mastoid that must become epidermized. (b) It brings about a "décollement" of the flap and the consequent production of a dead space between the flap and the bone. At the first operative period, this presents only a slight obstacle, but if the décollement comes about after the second operation the hearing recovered may be lost. It is difficult to establish the respective rôles of the "décollement" and the retraction in the formation of this "dead space." As a matter of fact, the surface of the aditus region and of the mastoid antrum is never regularly even, no matter what precautions one takes to curette it. Seen by the magnifying glass, there are small depressions and vestiges of mastoid cells containing remnants of epithelium. I am of opinion that this epithelium, submerged at first by the stratum of granulation tissue, has a tendency to reconstitute itself later, thus determining, under the flap, a veritable "plan de clivage," which diminishes its adherence and its vascularization, and so causes its retraction.

(2) The keloid process brings about a more or less considerable thickening of the piece, which makes it useless. I have observed it three times in nineteen cases. The first time, I kept on and trepanned the labyrinth. It is the only case in which, in spite of an excellent recovery of the hearing, I was unable to obtain definite results. The second time, I excised the cicatrix, and tried to find a new epidermization before opening the labyrinth. The third case is under treatment by radiotherapy. For these two cases, the second operation is, of course, put off until a later date, as yet undetermined.

(3) Secondary ulceration.—A few weeks, or a few months, after cicatrization, when everything seems to be all right, the epidermis may disappear and leave at the bottom of the antrum and of the aditus a bleeding surface, very difficult and even impossible to epidermize again. I have observed this in two out of all my cases; it is the worst accident of all.

The Thiersch grafts do not offer any guarantee of avoiding the above-mentioned accidents, and to remedy this state of affairs I am at the present moment considering a modification of the size of the internal plastic piece, which will exclude the tympanic cavity and will, at the same time, line the bottom of the aditus and the antrum with a well vascularized piece, without occasioning any of the annoyance caused by a cicatrix and having a great thinness at the point of the prominence of the external semicircular canal. If the vitality of this piece answers my expectations, this will be a great step towards the realization of a single operation instead of two.

Speaking generally, the objection made to this method is that it is too complicated, or I should rather say, extremely delicate. But that only depends on the nature of the lesions, the anatomic disposition and the minute dimensions of the organ on which one operates. An operation on the labyrinth will always be, by its very nature, delicate. In the case at hand, it has become complicated because, working in a domain almost entirely unknown, I have been obliged, before finding the shortest path, to explore a vast field, but I hope and believe that once we have defined with precision a certain number of points, we shall arrive at a period of greater simplicity.

I should like now to treat the important question of the influence of the operations on the hearing.

The first-stage operation (attico-tympanotomy) does not have for its object to modify hearing. It is simply preparatory to the trepanation of the labyrinth. As a matter of fact, it is followed quite frequently by a slight amelioration of hearing, less on the operated side than on the opposite side. It banishes the feeling of auriculo-temporal compression about which many otosclerotic patients complain. Lastly, in certain cases it diminishes the tinnitus, either on the operated side or on the opposite side. An occasional patient may be satisfied with the improvement thus brought about; for all others it is quite insufficient.

The second operation, the trepanation of the labyrinth, furnishes the occasion of many interesting observations.

(1) During the operation.—No matter how thin the osseous wall of the semicircular canal may be, no improvement whatever of hearing takes place before the perforation of this wall. At the very moment when the operator perforates this wall, the patient complains of violent dizziness of short duration (from one to two seconds) after which he hears with incomparable clearness and intensity. This re-appearance of hearing, as well as the dizziness, coincides with the loss of a very small quantity of perilymph. This can only be seen under a microscope with a magnifying power of 10 diameters. The magnifying glass of Gullstrand of two diameters is insufficient. The improvement in hearing depends on many factors:—

(a) The degree of former deafness. In the case of a patient having one ear absolutely deaf, I obtained very good hearing of the normal conversation voice at 40 cm. In a case of average deafness, the low-spoken voice being heard at 10 cm. before the operation, I obtained, a few minutes after the opening of the labyrinth, hearing of the same low-speaking voice at 2 m. 50 cm.

(b) The size of the trepanation. I have observed, in one of my female patients, that hearing of the low-spoken voice at 40 cm. corresponding to a very minute opening, increased to 2 metres by the gradual opening of the orifice.

(c) It seemed to me also, in the course of another operation, that for a given

orifice, the hearing improved gradually during a few seconds, attained its maximum, and then, a few minutes later, diminished.

In the first case, one must allow that the hearing should, in a way, be proportionate to the former state of the labyrinth, functionally speaking. In the second, to the size of the labyrinthine trepanation; in the third, to the quantity of perilymph which escapes; that is to say, with regard to the pressure of the perilymph, the maximum hearing corresponds to an optimal pressure.

In all these cases it is the low-pitched sounds—33, 44, 54—which are those heard best, although before the trepanation hearing was relatively better for the high-pitched sounds—56, 66.

I have also tried to find through what medium the sound waves come to the labyrinth.

In order to make possible the perception of the low-speaking voice in the course of the operation at a distance of 2 metres, it is necessary that the labyrinthine trepanation be laid open. If one covers it with an epidermic flap, immediately the voice is not perceived at 1 metre, or 80 cm., or even less. The maximum audition seems then to correspond to the penetration of the sound waves by the labyrinthine fistula thus made. If, now, I apply paraffined gauze, covering alternately the tympanum or the epidermic flap, I obtain, according to the former degree of deafness and the state of the flap, hearing equally well by the tympanum or the labyrinthine trepanation. This indicates that the hearing can be perceived equally by the tympanic route and the fenestra rotunda or by the labyrinthine orifice and the scala vestibuli.

If I cover the tympanum and the orifice of labyrinthine trepanation at the same time the low voice can even then be heard at a few centimetres, and the high-pitched voice is understood with an intensity and a clearness unquestionably better than before the operation. The bone conduction is improved at the same time as the air conduction. The Schwabach has the same value and the Rinne remains negative. Therefore the opening of the labyrinth at the prominence of the semicircular canal and the decompression of the perilymph which results thereby, authorizes the following deductions:—

Hearing is maximum when the sounds reach the labyrinth directly, via the orifice of trepanation. It is proportionately better according to the size of the orifice and when nothing is interposed between the orifice of trepanation and the sound vibrations.

Aerial hearing by means of the tympanic cavity is equally improved but remains inferior to hearing directly by the labyrinthine route.

Bone hearing is prolonged by the opening of the vestibule and the decompression of the perilymph. The Schwabach remains prolonged and the Rinne negative.

(2) After the operation.—This improvement of hearing diminishes rapidly, and on the third, fourth or fifth day after the operation, has often entirely disappeared. On the seventh day, on taking out the paraffined gauze packing which serves to apply the flap against the orifice of the labyrinthine trepanation, the low voice is only heard at 10 or 15 cm., the superior limit of high-pitched sounds is lowered to from 3,000 to 4,000 vibrations, and both the patient and the surgeon are well-nigh discouraged. The bone hearing of the 128 d.v. fork has not, however, varied, the Schwabach and the Rinne have remained at their previous value. This diminution of hearing is certainly the effect of cedematous or inflammatory alterations of the labyrinth closely related to the status of the flap that closes the orifice of trepanation. But gradually, as the epidermization improves, as the mastoid cavity dries and as the flap becomes thinner, the high-pitched sounds improve to their former limit and the hearing also improves greatly and, at the end of the healing process, almost reaches the stage at which it was at the end of the operation. This improvement

keeps on during the months following, in harmony with the thinning of the epidermic flap, and, I think, with the return of the labyrinth to its former state.

I have observed that ionization with zinc chloride is particularly useful at this stage of the treatment.

End-results.—Up to now, they have seemed to me to depend entirely on the behaviour of the epidermic flap. If the flap remains thin, closely applied against the osseous surface and the orifice of trepanation of the semicircular canal, the hearing lasts without any change. I can speak now of cases eight and twelve months old. If, on the contrary, the flap becomes thickened or retracts from its bony support, especially at the orifice of labyrinth trepanation, the improvement obtained is partially or totally negated. The critical period is that which immediately follows the termination of the epidermization of the mastoid cavity, after the second-stage operation. A month or two later one can consider the results as definite.

In the six cases that I have completely treated up to now, I have observed one total and two partial décollements.

Regarding the total décollement, I have been able to verify surgically that the loss of hearing comes only from the unfavourable evolution of the flap and not from the occlusion of the orifice of labyrinthic trepanation by a callus formation, by reason of the fact that a re-application of the flap on the semicircular canal, opened six months previously, has enabled me to observe a positive fistula sign and make the hearing re-appear as on the first day of the opening. A short time after this re-application, the flap again retracted and hearing disappeared for the second time. In spite of these difficulties, I do not consider this case to be hopeless; I think rather that with time, the cicatricial process of the flap will come to an end and that it will be possible for me to obtain spreading out and better adherence of the flap. One of the great advantages of the open method is, as a matter of fact, that it permits one to re-operate easily and to practise the successive operations without any danger. The partial décollement alters the improvement obtained, but without total loss of the hearing thus recuperated.

Here, again, a secondary improvement of hearing is possible, either spontaneously, a few months later, by a loosening or thinning of the flap, or surgically, by a re-application of the flap.

In answer to a question raised by Professor Bárány and Professor Holmgren, I may say that all my patients have, at the present moment, a positive fistula sign, that is to say, that the pressure on the orifice of labyrinthic fenestration determines a nystagnus and a sensation of dizziness; the pressure necessary to produce these symptoms varies with the thickness and tension of the epidermic flap. The fear of the closing of the artificial fenestrum by a bony new formation does not seem to me worthy of consideration.

In no case has the labyrinth suffered; the superior limit of high sounds has always been conserved and has even surpassed the limit previous to the operation.

Practically, the results obtained in the six cases are as follows:—

I. Mme. G. Operation a year ago. High voice heard at 6 metres instead of 2 m. The cicatricial flap is thick, partially retracted. Hearing for conversation is, however, greatly improved. There is, nevertheless, intense tinnitus.

II. Mlle. M. Operation three months ago. Hears the low voice between 0.70 and 1.50 m., according to the compound sounds, instead of 0.05 m. High voice at 12 metres instead of 2. Almost complete disappearance of tinnitus.

III. Mr. B. Operation eight months ago. Complete deafness on the operated side, but with bony perception of the 128 d.v., 20 seconds. Hearing recuperated at 40 cm. for the high voice, then disappearance on account of retraction and thickening of the flap. Six months after, re-application of the flap; return of hearing. The hearing has now disappeared again on account of retraction of the flap. In spite of these failures I still hope to succeed in a later operation.¹

¹ This patient has been seen again recently; the flap became thin again and she now hears high-pitched sounds at 40 cm.

IV. Mlle. G. Operation two months ago. Low voice between 50 cm. and 1.50 m. instead of at 10 cm. before the operation. High voice at 7 metres instead of at 3. Slight partial retraction of the flap.

V. Mlle. L. M. Operation six weeks ago. Low voice at 50 cm. instead of 0.05 m. High voice at 10 m. instead of 7 m. Partial décollement at the end of the healing period.

VI. Mlle. L. Operation two months ago. Epidermization not yet finished on the upper and hind part. Low voice between 50 cm. and 1 m. instead of 0.05 m. before the second-stage operation. The flap sticks well.

In these last three cases the improvement in hearing will continue during a few months.

It will be noted in all the six cases that:—

- (1) It is the low sounds—33, 44, 54—which are best heard.
- (2) The hearing is proportionately better for the high voice than for the low voice.
- (3) The improvement is not only in intensity but, and more especially, in clearness and distinction of hearing.
- (4) Except in Case II, the improvement in hearing for ordinary purposes is observed by all the patient's friends and relations.

CONCLUSIONS.

Surgically speaking, this two-stage treatment gives the maximum security; the chances of infection of the labyrinth are practically *nil*. The condition of the labyrinthine fistula can be examined at any moment, and readjustments are possible and easy.

Functionally, this method is a proof that if the fenestra ovalis is blocked by the stapes, and even if there are at the same time neuro-epithelial changes in the membranous labyrinth, it is possible to restore the hearing to a large extent by making another labyrinthine fenestra into the curve of the horizontal canal. The hearing thus recovered can be preserved by shutting off this cicatricial membrane.

The recovery of hearing appears to depend on five factors: (1) The degree of deafness before operation. (2) The decompression of the perilymph. (3) The size of the artificial orifice. (4) Direct access to the labyrinth by waves of sound by means of this orifice; any obstacle intervening between the perilymph and the outer air diminishes hearing. (5) This membrane should be epidermal on the outside in order to stand exposure to the air and its impurities, and epithelial on the inside, where it is in contact with the perilymph. It should be thin and should adhere closely to the orifice of the artificial fenestrum, so as to transmit the vibrations of the air to the perilymph in their entirety.

The method which I am placing before you enables these physiological conditions to be fulfilled. I think that within a short time I shall be able to improve upon it and still further reduce the causes of failure. If, as I have every reason to hope, the results obtained from my other patients now under treatment confirm the original data—which are, to a certain extent, experimental—we shall at least have obtained valuable assistance in planning our future work for those unfortunate beings, morally and socially afflicted, to whom, in our despair, the only counsel we could give was inaction, celibacy, or voluntary sterility.

Discussion.—Mr. G. J. JENKINS said that he had operated upon some cases of "otosclerosis" and had published the results in a paper read at the International Congress of 1913. The operation had been described in that paper. Briefly, it consisted in making a small window into the external semicircular canal.

He was prompted to perform the operation because it seemed to him, on clinical grounds, that the symptoms and signs of otosclerosis were probably due to changes in the labyrinthine fluid and not to the fixation of the stapes. The object therefore was not to make a new window, but to alter the physical condition of the labyrinthine fluid by allowing what was in the labyrinth to escape, and so promote the formation of a fresh fluid which might be nearer the normal.

Certain observations were made that might be of scientific value. At the operation it

was noted that in all cases there was no flow of fluid from the labyrinth when the opening was made into the canal.

In all there was a marked improvement in hearing immediately after operation. In one case the hearing was improved from two feet to fifteen feet. Within six months the hearing had returned to the condition before operation. In all cases the tinnitus disappeared immediately after the operation and did not return.

Recently he had carried out a similar operation on a patient who had advanced otosclerosis complicated with osteitis deformans. The right ear was functionless and no response could be obtained from auditory or vestibular elements.

The patient could hear loud shouting in the left ear and could distinguish occasional words. He had been under observation for about twelve years and had tried many remedies for the continuous "steam escaping" and whistling noises in the left ear. He became desperate—perhaps suicidal—and it was decided to try draining the labyrinth through the external semicircular canal, as this had given relief in ordinary cases of otosclerosis.

The operation had been more difficult than usual, on account of the changes in the bone of the canal and the severe bleeding. No fluid escaped from the opening and there seemed to be a negative pressure on the canal. The noises disappeared and the day after the operation the patient was completely relieved and happy. The operation had been performed six weeks previously and the patient was quite satisfied with the result, though he was stone deaf and had difficulty in getting about at night.

He (Mr. Jenkins) wished to emphasize that he did not advocate operative treatment for otosclerosis and had only narrated this case in order to record certain facts of scientific interest.

Dr. DAN MCKENZIE said that Dr. Sourdille had supplied a novelty in two operations, the object being to avoid sepsis. When one came to operate on dry ears, the difficulty was that the surgeon found it very hard to control sepsis; it was practically impossible to sterilize the depths of the meatus. If by sterilization one could prevent sepsis here, one could experiment in these cases much more freely. If suppuration occurred after operation on a patient whose ears had been dry, it meant that instead of being simply deaf owing to dry changes in the middle ear, the patient was still deaf but was now subject to chronic suppuration—a transformation which no one could contemplate with equanimity. Dr. Sourdille's plan therefore might eventuate in giving more freedom for experiment.

As to the essential part of the operation: from the point of view of deafness, that of making an artificial window in the labyrinth outer wall, it was an obvious procedure to anyone who thought out the pathology of the condition and yet it was also easy to criticize *a priori* what would happen when a small window was made. After the hearing had improved, the window would be closed by a cicatrix, which would become less and less mobile, and when finally, it was fixed, one could scarcely expect the patient to hear better. Still we ought to experiment to see whether these *a priori* fears were borne out by the result. They might be wrong, or it might be possible to devise a cicatrix like Dr. Sourdille's, which would, perhaps, remain flexible.

Mr. HAROLD KISCH said that he had performed some operations in cases of deafness and catarrh of the middle ear. He had not thought that any operative procedure would give permanently beneficial results in otosclerosis, but possibly, in other types, making a new opening into the internal ear might result in improved hearing. He had considered the question as to whether he should make his new opening through the semicircular canal or through the promontory, and had decided on the latter. He employed a simple method, namely, exposing the middle ear and then using a small trephine which was worked from a dental engine. The trephine fitted well over the cap of the promontory, the outer wall of which was removed. The opening was closed immediately by means of a skin graft, taken from the thigh. He had shown some cases illustrating the results of this operation at a meeting of the Section several years ago,¹ and just before the war he had collected his results in eleven cases. During the war, however, his papers were lost and the patients were scattered. But recently he had heard of two cases of that series, and the results of those were interesting. One patient whom he had shown was a kitchenmaid, and she could not obtain any other employment because she was unable to hear the bell or the voice properly. Two years afterwards she became a housemaid as she could hear much better, and recently she obtained a post as shop assistant, indicating a marked improvement in hearing. In the other of the two cases

¹ See *Proceedings*, 1912, vi, Sect. Otol., 36.

the girl went to Australia. She was a teacher, but had been obliged to give up teaching because she was so deaf. Recently, however, she had been able to resume that occupation. The records of the other cases had been lost.

Sir JAMES DUNDAS-GRANT said that an interesting point had emerged, namely, that after the primary operation, if a not too-active plastic procedure was carried out and the membranous wall of the meatus was allowed to "tapestry" the posterior wall of the cavity, it would adapt itself. Instead of becoming thicker it became extraordinarily thin, and there was a closer adaptation to the bone through a process of centrifugal contraction. This was exemplified in a case which he had exhibited—that of a girl upon whom he had operated many years previously for cerebral abscess, without carrying out any plastic procedure. When the case was shown, the cavity of the mastoid operation was seen to be lined with an ideal thin lining, finer than a Thiersch graft. That was a great point which Dr. Sourdille had brought out. When this thinning took place, several months later, was the favourable moment for the procedure. It was a distinct advance on what had been shown before.

Mr. ALDINGTON GIBB said he had had a male patient (a lecturer) suffering from advanced otosclerosis, who could not hear any sound with his ear. He (the speaker) was invited to perform on him any operation he liked. His reply was that he could not undertake an operation as he was unable to promise success, but that if he could be permitted to bore a hole in the drum he would do so. He bored a hole in the postero-inferior quadrant, and the man was able to hear conversation and to hear his knife and fork at work during a meal. That had been an advanced case of otosclerosis. This operation had been repeated with similar success.

CASES.

Modified Radical Mastoid Operation. Hearing greatly improved by Operation, with Healing of Perforation in Membrana Tympani.—
J. ALDINGTON GIBB, M.D.

Patient, Mrs. C., aged 27.

History.—Offensive watery discharge intermittently for a year. No vertigo, no tinnitus. Occipital headaches frequent.

Examination.—Left membrana tympani swollen and red, with a perforation in postero-inferior quadrant, drainage imperfect. No pain on percussion in any vital spot.

November 15, 1929.—Conservative mastoid operation according to the exhibitor's method, namely, complete mastoid operation with removal of entire posterior bony wall and outer wall of aditus. Membrana tympani not touched. Ballance's flap. Cholesteatoma was present in attic. Membrane lining aditus was polypoid.

Tests to-day.—Left: whisper, 1 ft. Ordinary voice, 12 ft. Absolute bone conduction = 35 sec. Improved hearing appears to be in part by way of labyrinth direct, i.e., through mastoid cavity.

I used to remove the outer wall of the attic; after a tedious and extensive operation the resulting hearing power was good for some time and the middle ear remained very dry, and practically scurfy. What made me change my mind with regard to the operation was the fact that at the end of two years a boy turned up at the out-patient department with his middle ear full of granulations, although the whole thing before that had been dry. It took me several weeks to remove these granulations, and his ear is now dry again. It is a tedious operation, because the roof of the tympanic ring must be removed right round to the anterior insertion of the ring. In this present operation I remove the whole posterior meatal wall up to the aditus, then clear out the middle ear carefully, syringing it and cleaning it thoroughly. Then I remove the sloping roof of the aditus, or rather the outer wall which slopes up to the roof. As part of the membrane is "flappy" the middle ear must be cleared out before that portion of the outer wall of the aditus is removed, as it holds up the membrane. The membrane is now fixed to the posterior wall, the aditus is thus obliterated, and there is no communication between the attic and the mastoid

antrum; it is all one smooth cavity. Before the operation the absolute bone-conduction was only 15 seconds, the ordinary voice only 1 ft., low whisper 6 in., and high 8 in. The absolute bone conduction is now 35 seconds; ordinary voice is heard at 12 ft.; so there has been a great improvement since the operation. From certain tests carried out I am inclined to believe that the improvement in hearing is largely labyrinthine and not entirely by conduction through the middle ear.

Discussion.—Mr. J. F. O'MALLEY said he would like to know what was the method referred to in the notes; it seemed to him to be the same operation as described by Ruttin in 1916, namely, trans-mastoid atticotomy. The method had interested him at that time, because he had a young officer under his care at Woolwich on whom he thought he would try it. The procedure was to perform the ordinary mastoid operation and to remove the posterior meatal wall, preserving what membrane was left, with the ossicles, and cutting down the projecting edge of the attic wall. It answered very well. It was difficult to remove the bony connections posterior to the drum without disturbing the drum.

Mr. L. GRAHAM BROWN said this was the type of operation which he now performed more often than any other in certain cases of chronic suppurative otitis media; he had described it in his paper read before the Section in November, 1929.¹ The tendency nowadays was to perform that type of operation, with perhaps, some modifications.

Sir JAMES DUNDAS-GRANT said that in 1902 he had shown before the Otological Society (*Proceedings*, vol. iv, p. 22) a case like the present one. In that case a "modified radical" operation had been performed. Pus issued in great quantity from an opening in the attic; it was of cholesteatomatous character in a comparatively young (8 years old) child. He (the speaker) had enlarged the attic opening and opened the mastoid cells, carefully preserving the membrane and ossicles. The discharge had dried up in from six to eight weeks, though the progress had been interfered with by the onset of scarlet fever. He felt that this was the kind of operation one would like to carry out regularly, but he found that cases suitable for it seldom arose.

Mr. ALDINGTON GIBB (in reply): The operation which Mr. O'Malley describes is one that was performed by Sourdille prior to 1918, "Trépanation mastoïdienne élargie et atticotomie transmastoidienne." This is fully described in "War Otitis and War Deafness," by Bourgois and Sourdille (translated by Sir James Dundas-Grant). I have performed that operation many times, but have given it up and now invariably perform this present one, which on the outer wall of the attic is not touched, only the outer wall of the aditus being removed. After-treatment must be very carefully attended to. This operation is not meant to supersede either the Schwartz or the radical operation. So far as I have been able to discover, it has never been previously described.

Extreme Procidence of Lateral Sinus.²—E. WATSON-WILLIAMS, M.C., F.R.C.S.Ed.

The patient, a girl aged 17, came to me early in March 1930, suffering from primary acute otitis. There was pain, otorrhœa, some fever (temperature 100·0° F.) and great tenderness over the mastoid tip, with slight œdema behind the ear. A Schwartz operation was carried out. At the first stroke of the gouge the lateral sinus was exposed. Cautious removal of bone showed that it ran forward very high up—only a paper-thin plate of bone separating it from the middle fossa—then turned downward sharply and ran down quite superficially 2 mm. only behind the posterior bony meatal wall. A large cell in the tip of the mastoid was full of pus, but the problem of approach to the antrum was complicated. Finally the sinus was packed off, and the antrum was opened through the bottom of the sinus groove. The patient seemed very well later, but on several occasions vomited profusely and suddenly. The pulse ranged down to 60, with a somewhat low temperature and constipation, but no headache. For a fortnight an intracranial abscess was suspected, but the condition cleared up without further complication, and the patient is now very well. No signs of labyrinthine or cochlear involvement at any time.

¹ *Proceedings*, 1929, xxiii, 385 (Sect. Otol. 5).

² For an account of a similar case see A. Nepveu, *Bull. d'oto-rhino-laryng.*, Paris, tom. xxi, p. 81.

Section of Odontology.

[November 25, 1929.]

The Design of Partial Dentures considered in Relation to the Health of the Oral Tissues.

By J. H. BADCOCK, L.R.C.P., M.R.C.S., L.D.S.

FIFTY YEARS ago the dental profession looked little beyond the teeth. Pain, inability to chew and unsightliness were the main evils it sought to remedy; its energies were bent towards the preservation or restoration of the teeth as parts of the masticating machinery; dentists were largely tooth carpenters and prosthetic engineers. Gradually our outlook widened until, through the perspicacity of Dr. William Hunter, who, in February, 1899, read before the Odontological Society his epoch-making paper on "Oral Sepsis as a Cause of Disease," we realized the repercussion of mouth conditions on the general economy, and that oral health meant much more than merely masticating efficiency. We now know that infection of the gum and periodontal membrane is fraught with danger, we know that food débris held in contact with teeth causes caries, yet we continue to cover with our dentures gum margins and large surfaces of teeth. The first principle of treatment is that it shall, at least, do no harm, or, if to do much good some harm be unavoidable, the harm must be the least possible. Yet the design of most partial dentures to-day (full dentures admit of little variation) remains what it was half a century ago, and over a wide field, modern knowledge has modified it not at all. We still talk a great deal about "stress" and "balance" and "stability"; but pay little or no attention to the hygiene of our restorations, whereas hygienic considerations should come first, and the rest, important though they are, should occupy a secondary place.

Covering gum margins causes gingivitis, or increases it if present, and covering tooth surfaces causes caries—everyone knows it, yet our dental schools still include upper and lower plates chased round the necks of natural teeth, in their curricula for students, and many of the specimens of their work displayed for the admiration of the onlooker, differ little, if at all, in design from those of 1880. Many are so designed as to do the maximum of harm with the minimum of good.

Study of what has been written on the subject in recent years shows that the principle that it is injurious to cover gingival margins is steadily, if slowly, gaining ground, though comparatively few who profess it seem willing to carry the practice to its logical conclusion.

The first step in its application to partial dentures was made, so far as I am aware, by the late Breward Neale, who demonstrated what is known as the "wire lower," now widely used, before the Odontological Society about the beginning of the century. I adopted it from that day, and in 1911, in a paper published in the *British Dental Journal*, 1911, xxxii, 1069, entitled "Sepsis and Prosthesis," illustrated the application of the principle to upper dentures as well. I will quote a few sentences.

"If you will look carefully you will find that wherever a plate comes in contact with the neck of a tooth a marginal gingivitis exists; the gum is frequently redder at that point than it should be, generally shiny, often everted, can be easily lifted away from the tooth, and almost always conceals a rim of tartar, this deposit being, of course, the result and not the cause of the inflammation. This condition is far commoner than one would suspect, indeed I believe that it is always present though not always apparent. The gum may look healthy, but examine it carefully and you will find the rim of tartar and the other signs of commencing

periodontal disease due to injury by the pressure of the plate, and to the loss of that natural friction which seems so necessary to the health of gum tissue." . . . "Plates should therefore be so designed as to cover no more gum than is absolutely needful, and be cut away freely behind all natural teeth to allow of the friction of the food and tongue on the gum margin, which is the normal accompaniment of mastication."

The experience of another eighteen years has served only to confirm and strengthen the opinion there expressed.

In a paper prepared for the International Dental Congress in 1914, the late Douglas Gabell stated that: "The firm establishment of the necessity of avoiding covering up the gum margins about septic teeth is the greatest advance of modern years in the design of partial dentures," and in his book on "Prosthetic Dentistry," published in 1921, he continues to lay great stress on this matter. In 1916, W. E. Cummer, Professor of Prosthetic Dentistry at the Royal College of Dental Surgeons, Toronto, published a paper on "Partial Dentures" (in the *Journal of the Allied Dental Societies*) of which this sentence is the kernel:—

"The clinical experience of all . . . offers a convincing proof of the first and most important essential in the design of a partial denture . . . namely, the necessity for keeping all parts . . . away from the free margin of the gum."

This paper is endorsed and quoted fully by Ludwig Köhler in the 4th volume of Scheff's "Handbuch der Zahnheilkunde," published this year. Edward Kennedy, formerly Demonstrator of Prosthetic Technics in the Dental School of the University of Pennsylvania, in his textbook of "Partial Denture Construction," 1928, says:—

"I believe it is of the utmost importance to prevent pressure on the gingival margins of the gums, and the longer I practise dentistry the greater necessity I see for the type of denture construction which prevents pressure on this region."

Mr. William Simms, formerly Lecturer on Dental Mechanics and Dental Prosthetics in the University of Manchester, writing in the *British Dental Journal*, 1929, 1, 881, says:—

"In the lower denture the pathological condition brought about by the extension of a plate . . . across the remaining lingual surfaces of remaining front teeth must often have been revealed to the dentist, and a similar condition is often caused in the maxilla when the plate of an upper, replacing back teeth, reaches up to and presses on the lingual surfaces of front teeth. . . . This condition has too often been tacitly accepted on the principle that a vicarious sacrifice was justifiably demanded. It is the main purpose of this paper to demonstrate that partial denture work can usually be designed without making this sacrifice necessary."

Nevertheless in the illustrations which follow, the principle is only partially applied, and his "Manual of Dental Prosthetics," 1927, valuable though it is in many respects, abounds in illustrations of dentures designed with no respect for gum margins. On the other hand, I can find no mention of gum margins in the "Manual of Dental Prosthetics," by G. H. Wilson, Professor of Prosthesis, Western Reserve University and University of California (1918), nor in "Prosthetic Dentistry," by Prothero, N.W. University, Chicago, which contains many illustrations of old-fashioned bad designs. The latest pronouncement on the subject with which I am acquainted is that of Mr. Clayton Cooper in the *British Dental Journal*, 1929, 1, 1083, who says:—

"There will probably be a general agreement that when a denture is worn, however careful the patient may be as regards cleanliness, and the prosthetist as regards the fit of the appliance, if the denture is adjacent to the gum margin round the necks of the teeth, gingivitis will follow, leading later to the formation of tartar and pyorrhœa."

From these quotations it appears that the majority of authorities are whole-hearted believers in the principle of free gum margins, that some of them put the principles into practice to the fullest extent and others only partially, while a minority ignores it altogether.

Now let us consider caries. No one will be found to dispute the fact that oral secretions and food particles held in contact with the teeth will set up caries, and lead rapidly to their ultimate loss. Obviously, therefore, clasps should be as few and their area of contact as small as possible, and their shape such as to entrap the least quantity of food. Usually they are too wide and too uniform in width. A flat band fitted round a convex tooth will be in contact over a very small area: where it is not in contact it should be cut away; where it actually touches, it will be clean, where it does not, it will merely serve to entrap débris and hold it against the tooth.

The more accurately the clasp is made to fit the convexity of the tooth, the smaller it need be. A mere line of contact in exactly the right place would be the ideal, and the nearer we can get to this the better. If a clasp be made on these lines, encircling the thickest part of the tooth for just more than half its circumference, and cut away as far as possible where not in actual contact, it will usually be found to assume the form of a point, a shape which adds to its efficiency as a spring, and is least noticeable.

Except when teeth are very short and nothing else is possible, clasps should never extend to the gum margin, the junction of the tooth and the gum should be left free. It is often possible to effect this by joining the clasps to the plate by means of an attachment bridging the space left at the neck of the tooth. In proportion as a clasp is narrowed, it must be thickened to give it the necessary strength. It should be thickest at the point of attachment and taper towards the point. The contact points of the artificial teeth with the natural teeth should be on Nature's model as much as possible, i.e., they should be convex, and one should aim at getting contact points rather than contact surfaces.

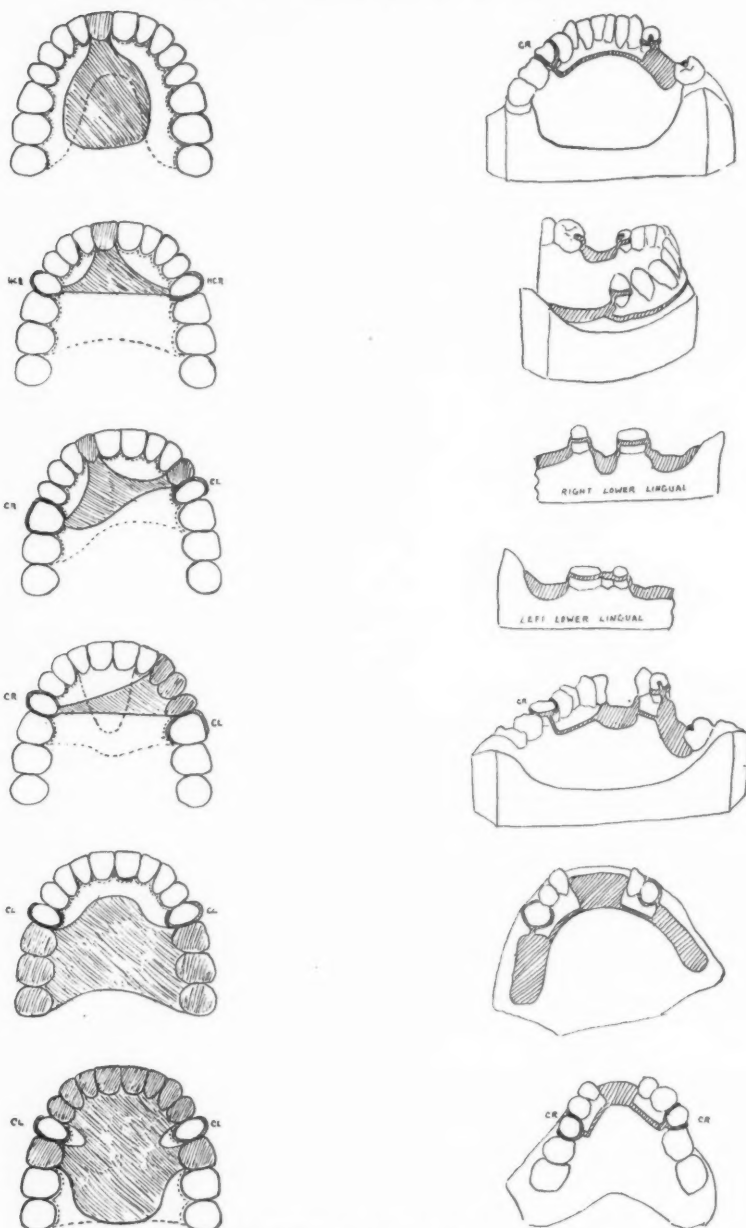
In order to avoid the use of clasps, both for æsthetic reasons and because of the damage they may cause, plates are often constructed with larger surfaces of vulcanite clinging round the necks of the teeth; and recently soft rubber has been advocated for this purpose where the teeth are much tilted. I believe this to be entirely wrong. Narrow clasps accurately fitted to the bulge of the tooth, correctly shaped, and not extending to the gum, will do the minimum of harm, indeed they may be worn for many years without doing any harm at all.

Of course, they must be kept clean as must the teeth they embrace; but I hold it to be the duty of the dentist not only to instruct his patient in the first instance as to what measures of cleanliness he should adopt, but whenever occasion may offer subsequently, to criticize the condition of his dentures in this respect. Most patients will welcome this criticism and profit thereby, though there will always be a few incorrigibles on whom reiterated warnings will have no effect.

The increasing recognition of the evils resulting from the covering of gum margins has led to the wide advocacy of various forms of "skeleton" plates, and many of the latest textbooks abound in descriptions and illustrations of various ingenious designs of this kind. With the great majority I agree only in part. The "skeleton" design ignores adhesion—or "suction," as it is usually called—as an aid to retention.

The whole weight and strain of a "skeleton" plate must necessarily be taken by the teeth embraced by its supporting clasps. Any support which suction can give will lessen the strain imposed upon the anchor teeth to that extent and often reduce it to a negligible quantity, therefore I object to sacrificing any aid that suction may be made to give.

Harmful though it is to cover the margins of the gum, covering the palate and alveolar ridges very rarely has any ill-result if the dentures be kept clean, and left out at night as they always should be: indeed, the only objection I see to covering the palate is the initial discomfort which in almost every case passes off quickly and completely. So much do I prefer retention by "suction" to retention



Designs of dentures as commonly used, shown by dotted lines.
 Designs of dentures as advocated by the author, shown shaded.

CR = Crib.

HCR = Half crib.

CL = Clasp.

by clasps that I have no hesitation in using a rubber "suction disc" if need be, and if thereby I can dispense with clasps altogether.

The suction disc has come in for a great deal of condemnation, but if it be kept reasonably clean and renewed before it swells beyond the margins of its cell, I believe it to be absolutely harmless. In the course of a long career I have never seen any worse result than a little superficial inflammation in cases when it has been worn too long without renewal. It gives great confidence at first and is generally voluntarily abandoned by the wearer later, as unnecessary.

In the case of a gold denture when I hope to get help from "suction" I prefer it cast, as giving a closer fit.

The construction of dentures on the above lines demands more thought in designing and more skill in the making, but the extra expenditure of time and labour is richly repaid in that it reduces to a minimum—indeed, practically eliminates—the damage to the oral tissues of which dentures of the older types are so prolific a cause. Finally, let me say that I am advocating no untried methods depending on theory alone, but principles of construction which have stood the test of a quarter of a century.

[April 28, 1930.]

Two Cases of Buried Mandibular Teeth with their Crowns in Opposition.

By F. COLEMAN, M.C., L.R.C.P., M.R.C.S., L.D.S.

(I) About two years ago a man, aged 30, was sent to me for an opinion as to the causation of a discharging sinus on the lower gum. The discharge had been present for over a year and the condition had been regarded as a manifestation of



FIG. 1.—Shows a buried premolar and a molar tooth in the mandible (right side) lying horizontally with their crowns in contact. Note the density of the bone around the roots of the teeth and the area of rarefaction (due to suppuration) around the crowns of the teeth.

osteomyelitis; treatment had, accordingly, been on palliative lines with the expectation of the exfoliation of a sequestrum. I had a skiagram taken, and this revealed a premolar and a molar tooth lying buried horizontally in the jaw with their crowns locked in occlusion (fig. 1).

A week or two later, under a general anaesthetic, I removed both the buried teeth. The discharge continued for a few weeks, but eventually the wound healed.

(II) My attention was drawn to this patient by one of my dressers at St. Bartholomew's Hospital, who stated that he could get no movement in what he believed to be a buried root which he was endeavouring to extract. This dresser had worked with me for some months and knew that my wishes were to desist, rather than to break a tooth which offered undue resistance. I had not seen the patient previously, so began to operate on the dresser's assumed diagnosis; in fact I

was almost compelled to do so, as the soft tissues around the tooth had been a little damaged and prevented a clear view of the tooth being obtained. I soon found, however, that my attempt with forceps was also of no avail; the tooth simply swung with the movements conveyed to the jaw and I could detect no independent movement. Suspecting an abnormally formed tooth, or possibly an odontome, I did not persist in the extraction, but had a skiagram taken (fig. 2, negative). This showed two buried molar teeth lying horizontally with their crowns in occlusion, but not so closely locked as in the previous case. The anteriorly placed tooth was the one to which we had devoted our attention. The result of our attempts at extraction had been to produce a fairly acute local inflammation of the jaw with some trismus, and eventually an abscess formed below the jaw and had to be opened. Two or three weeks later, when the inflammation had subsided, the patient was admitted to the Royal Dental Hospital In-patient Department at Charing Cross Hospital for the removal of the buried teeth. On February 5, 1930, she was anaesthetized



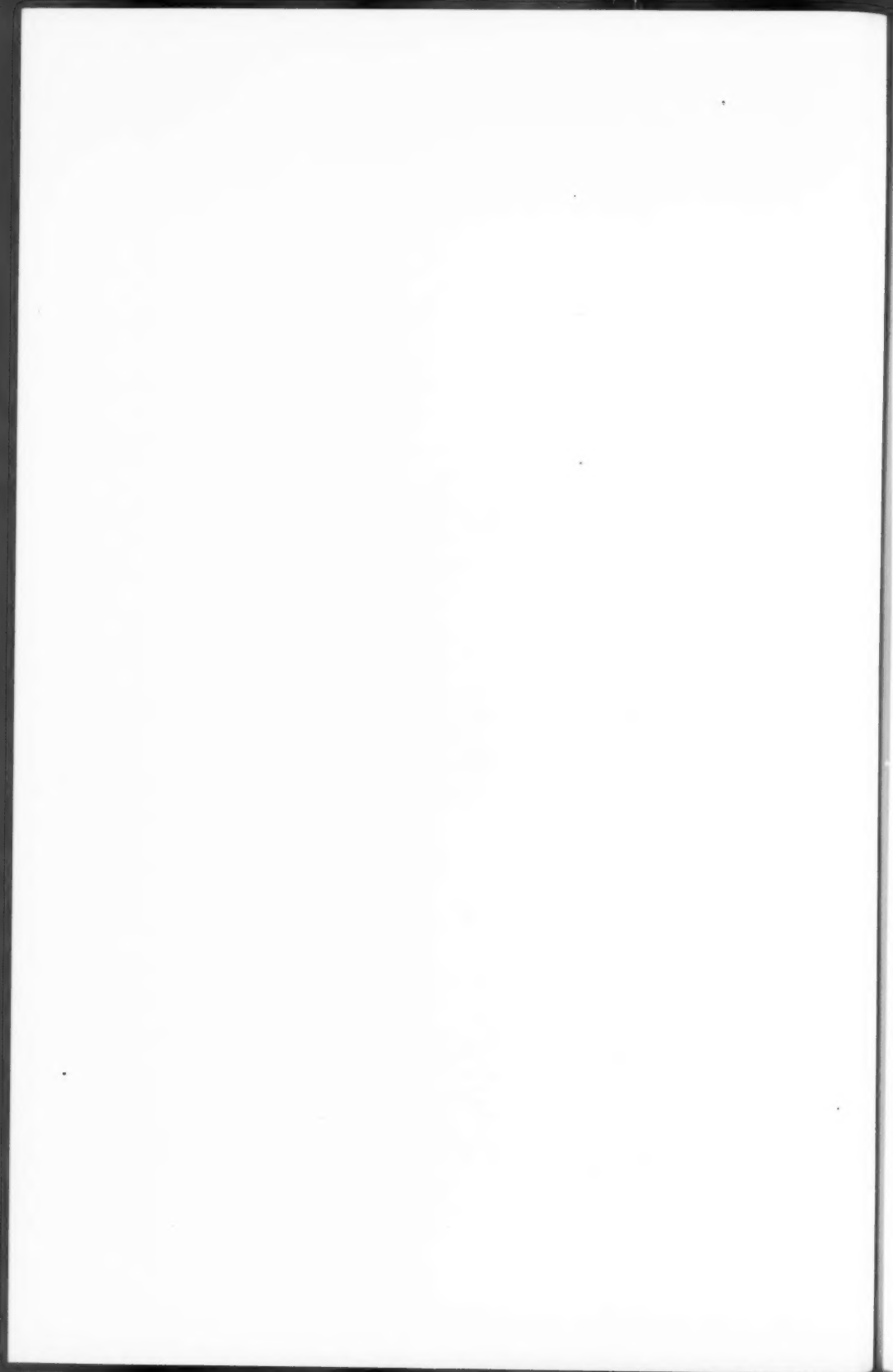
FIG. 2.—Shows two buried molar teeth in the mandible (right side) lying horizontally with their crowns facing each other.

and anaesthesia maintained by the intratracheal method. The two buried molar teeth were exposed by the removal of the bone above them and on their outer aspects, the inner aspect of the jaw being left almost intact.

The overlying bone was removed, mainly by means of Thew's electric mallet and chisel, but it was not until the teeth had been exposed throughout two-thirds of their circumference that they could be raised from the jaw, the front molar with a curved elevator and the back molar with upper bayonet forceps.

A case very similar to this was recorded by Mr. Curnock Sawday in the *British Dental Journal*, 1929, 1, 1310. All three cases have occurred in the premolar and molar region of the mandible. I can trace no other record of a similar condition in dental literature. The exhaustive treatise of Dr. Winter, which illustrates almost every conceivable position that a third mandibular molar tooth may occupy, makes no mention of this abnormality. Buried teeth should afford a clue to the eruption of teeth, for teeth buried in the jaws have neither socket nor periodontal membrane,

the bone and the tooth are contiguous, and in many cases the bone of the jaw is firmly united to the tooth. The inner layer of the tooth-follicle is apparently developed and forms the cementum of the tooth, but no development of the outer layer of the tooth-follicle to form the periodontal membrane and the socket appears to take place. From this one might be led to infer that the outer layer of the tooth-follicle plays an important part in the eruption of teeth, and the gubernaculum which is attached to the follicle may be also of importance in bringing about tooth eruption. Whether the gubernaculum is also absent when teeth are buried in the jaw I am unable to say. The inference, however, would be in favour of its being absent, seeing that it consists of fibrous tissue and is, therefore, of mesoblastic origin and derived probably from an extension of the mesoblast that gives rise to the outer wall of the tooth-follicle. If no bony partition or crypt is formed to keep the tooth in its alignment, one can understand how misplacement of a tooth can be brought about, and when this condition involves two adjoining teeth they will both become displaced in the line of least resistance.



Section of Surgery.

SUB-SECTION OF PROCTOLOGY.

[May 14, 1930.]

DISCUSSION ON RADIUM IN THE TREATMENT OF CARCINOMA OF THE RECTUM AND COLON.

Sir Charles Gordon-Watson : In November, 1927, when I was President of this Sub-Section, my Presidential Address was on the subject of the treatment of cancer of the rectum with radium.¹ My experience was then limited to the treatment of fifteen cases, over a period of less than three years. On that occasion I showed two cases. One was that of a woman, aged 37, who had been treated in April, 1926 (for a fixed inoperable, annular growth) by colostomy followed by perineal exposure and interstitial radiation with needles. A fibrous structure had followed radiation; the patient had gained much weight and was in good health. She remains in excellent health without sign of recurrence, four years after treatment, and has been shown to-day. This case is, I submit, evidence, on the one hand, that adenocarcinoma of the rectum is not always radio-resistant, as has been asserted by some workers, and on the other, that, when surgery is regarded as hopeless or inadvisable, radium can, for the favoured few, produce apparent cure.

Most of the cases treated during the first two years were advanced and inoperable, but I also showed on that occasion a woman who had had an early growth on the anterior wall of the rectum, which had been treated by colostomy and interstitial radiation with needles, inserted through the posterior vaginal wall. No trace of growth remained and the lumen of the rectum was only slightly narrowed. A year and nine months after treatment there were no signs of recurrence and the colostomy was closed. A fatal result followed a hæmorrhage from the area of anastomosis. The original site of the growth was carefully examined by Dr. Dukes. New epithelium had grown over the diseased area and no evidence of carcinoma could be found. At that time I regarded a preliminary colostomy as indispensable.

Since then I have treated several cases of this type without colostomy, and some with complete success up to date. One of these is shown to-night. I have emphasized these two cases because they exemplify the possibilities of radium with the operable and the inoperable growth.

Increased experience has, however, demonstrated that, though such favourable results are possible, the percentage of failures in operable growths does not justify treatment with radium in preference to surgery in the present state of our knowledge, unless surgery is contra-indicated on general grounds, or the patient is unwilling to submit to colostomy and excision. Although at the present time I have treated over

¹ *Proceedings*, 1927, xxi, 309.

a hundred cases of carcinoma of the rectum with radium, during a period of five years and a half, I still feel that I require much more experience before I can express definite opinions as to methods which should be adopted, or as to results which may be anticipated. It may, however, be useful, in reviewing results, to record some impressions.

Most of us who have worked with radium for carcinoma of the rectum realize that the difficulties of approach are a great stumbling block. If surgical access is easy there must be good reason for preferring radium to radical surgery. If there are no special reasons for not recommending surgery, then we must show good reasons for advising radium.

The Operable Case.—The strongest argument that could be used for radium in a case considered suitable for radical operation on both local and general grounds would be a reasonable prospect of destruction of the growth, with restoration of function of the rectum and without expectation of recurrence. In other words, we must be able to destroy the growth and not leave a rectal stricture of serious degree, and we must avoid a colostomy, or be able to close it, at the conclusion of treatment. This can be done, and I have treated a few cases successfully in this way, but I am quite unable to promise freedom from recurrence.

On the other hand, some cases of the operable type which seemed to offer equally good prospects have either responded and relapsed, or failed to respond appreciably to radium, and have been submitted to radical surgery after radium treatment. How far radiation previous to radical surgery is a factor in prevention of subsequent recurrence cannot be stated, but it is a matter for future consideration.

The recent work of Dr. Cuthbert Dukes on the classification of rectal growths examined after excision, published in the *British Journal of Surgery*, raises an important point with regard to the treatment of an early operable growth. Dr. Dukes's figures, based on a hundred cases, appear to show that there is no danger of lymphatic spread in an "A" or "B" case, and therefore that local resection may be all that is needed for a radical cure. (I should explain that an "A" case is one in which the growth has not begun to infiltrate the muscular coat, a "B" case one in which the growth has infiltrated the muscle but not passed beyond it, and a "C" case one in which the perirectal tissues are involved). Local resection may be accomplished, under the most favourable conditions, with restoration of function and without a serious stricture or a permanent colostomy. If this procedure should be established as surgically sound in regard to risk of recurrence, it would be necessary to promise a high percentage of success with radium if radiation is to be given preference. At the present time this promise cannot be made. Nevertheless the temptation to treat a small early growth in the infraperitoneal portion of the rectum by radiation is very great when one has seen such growths melt away and leave no disability behind, and when there are possibilities for subsequent surgery if radium fails. This temptation is increased if the growth is so accessible and so small that it can be adequately dealt with, either *per vaginam* or intrarectally, and further, must often appeal to the patient if the patient is given the choice.

It sometimes happens that an operable growth which has been treated without a colostomy retrogresses up to a point and then appears to remain stationary owing to chronic sepsis. This is illustrated by the case of a woman with a growth on the anterior wall of the rectum, treated at St. Mark's Hospital, by vaginal radiation, without colostomy. Response was inadequate and a second treatment was carried out by vaginal radiation with needles and intrarectal seeds two months later. No appreciable change followed after three months and I excised the rectum. Dr. Dukes reported that in his opinion the case would have been completely cured if it had been left a little longer, because there was practically no carcinoma left and the few carcinoma cells that were found were disintegrating. The general micro-

scopic characters were those of a chronic inflammatory ulcer. Before treatment a section showed that the growth was a typical adenocarcinoma. It is probable that this case would have been cured with radium in reasonable time if a colostomy had been done in the first instance.

The Inoperable and Border-line Case.—Individual standards as to operability vary, and therefore the border-line case cannot be defined, but there is general agreement in defining the advanced inoperable case, the large fixed annular growth, which has infiltrated through the rectal wall in all directions. How far can these cases be helped with radium, what are the chances of doing more harm than good?

It is not possible to discuss this subject fully in the time at my disposal. We all recognize that after colostomy, in the absence of liver metastasis, both the general and the local condition of the patient improve in the great majority of cases.

If colostomy is followed by radiation treatment it may not always be easy to say whether general and local improvement is the result of radiation, or colostomy, or both. My experience has shown, even in cases which have been submitted to colostomy some months previous to radiation, that rapid and marked general improvement follows radiation, even in the absence of any marked local changes. In a small percentage of inoperable cases the growth ceases to be active after radiation, and when it has been effectively barraged, is destroyed and transformed into a fibrous stricture.

The outstanding problem is to secure adequate and uniform radiation. To effect this a combination of methods is sometimes necessary, and often more than one treatment is required. At the time of colostomy, if the growth extends above the peritoneal reflexion, it is essential to treat this portion from the abdomen either with radon seeds or radium needles; the former are safer and the latter, I think, more efficient. The glandular area in the mesorectum is treated at the same time. Subsequently, if the growth is also infraperitoneal, this portion is dealt with in a variety of ways according to the extent and situation of the growth, either by posterior barrage, vaginal radiation, intrarectal seeds, perirectal needles, or by a combination of these methods, sometimes with the assistance of the intrarectal tube.

Very large and advanced growths should not be dealt with by the posterior open operation. The risks of perforation and secondary sepsis are considerable, and the prospects of cure too remote. In these cases great relief is often obtained from perirectal and intrarectal attack. I have described these methods fully elsewhere.¹

One example of combined treatment may be cited. A masseur, aged 37, came under observation in October, 1928, with a large annular cauliflower growth, which was mainly intraperitoneal and completely filled the rectum. It was evident that growth had been very rapid. The patient had lost weight rapidly and looked very ill. He was treated by colostomy and abdominal radiation, with needles to the upper portion of the growth. Three weeks later the main portion of the growth was attacked by perirectal needling and intrarectal seeds, and three months later the anterior portion of the growth was treated with perirectal seeds, the total dose of the combined treatment being 15,412 mgm. hours. At the present time, eighteen months after treatment, the patient is remarkably well, having gained much weight. The rectum is extensively fibrosed, and it is not possible to say if any growth remains.

The prognosis of a rapidly growing cauliflower growth in a man, aged 37, is extremely bad, and I am certain that this patient would not be alive and well to-day but for his radiation treatment.

Conversion of Inoperable into Operable Cases.—In several instances an inoperable

¹ *St. Bartholomew's Hospital Reports*, lxii, 1929. *Acta Radiologica*, vol. x, fasc. 4, 56. *British Journal of Surgery*, 1930, xvii, 68.

or border-line case has been treated with radium with such marked improvement that a radical incision has been carried out subsequently. I may mention two cases in which a perforation through the posterior vaginal wall was present at the time of radiation. In both cases the perforation healed, the growth became smaller and less fixed. Both patients are in good health after excision, and one has survived four years.

The Border-line Case.—In view of these experiences it would seem that the border-line case, i.e., the doubtful case as regards radical operation, provides a useful—perhaps the most useful—field for operation, either as a forerunner of excision, or, in some instances, with a prospect of cure.

Abdominal Radiation.—I first attempted to treat high rectal growths with radium through the abdomen in January, 1928. My first case has been shown to-night. The following is a brief history of it:—

L. C., a postman, aged 44, was admitted to hospital in January, 1928, with an annular growth at the junction of the pelvic and perineal portions of the rectum and fixed to the base of the bladder and to the sacrum. The abdomen was opened and the growth barraged with nine needles containing a total of 20.5 mgm. of radium left in position for 115 hours (2,357 mgm. hours). The pelvic colon was fixed outside the abdomen in preparation for colostomy. The patient, however, with a liberal supply of paraffin, continued to evacuate his motions *per anum* with comfort after the radium was removed, so that the opening of a colostomy was postponed and in the end was never carried out. No replacement operation was performed and the skin closed over spontaneously.

The patient returned to work soon after discharge from hospital and since then has remained in uninterrupted good health (now 2½ years).

Sigmoidoscopy shows a narrowed lumen but no evidence of growth. The bowels act normally and regularly. The site of the original colostomy wound shows no evidence of hernia.

I wish that I could show other cases as good. Still, there are others in which wonderful improvement has been made. The growths in several instances have shrunk and ceased to grow, and the general condition of these cases is remarkably good.

In all I have treated twenty-six cases by the abdominal route. The method is not without risk. I have lost one case from peritonitis.

The efficiency of the radiation depends on the extent of the growth and the presence of adhesions. It may be fairly easy to define the limits of the growth, and to secure a uniform barrage, or it may be impossible to define the growth accurately and be sure that the malignant area has been encircled, or to avoid puncture of the lumen. In some cases it may be possible to pass a rectal tube through the lumen of the growth from below and so to assist both the definition of the growth and the insertion of radium.

Great care is required to avoid puncture of the lumen and establishing a track between the peritoneal cavity and the bowel, especially when using needles—a track which soon becomes enlarged from radio-necrosis. This is more likely to occur with needles than with seeds. The method of insertion of the needles will vary according to the position and extent of the growth and I will illustrate this later.

The first stage of the colostomy is carried out at the conclusion of the radiation.

It is not essential to drain the peritoneal cavity when seeds are employed; in most of the cases drainage has not been carried out. If needles are employed, drainage is essential and packing off of the radiated area with rubber tissue is advisable. The strings attached to the needles are brought up to the adominal wall but buried beneath the skin. When needles are employed it is advisable, if possible, to delay a colostomy until after their removal (from five to seven days later). When seeds are used, the colostomy can be opened whenever necessary. The employment of needles in suprapertoneal growths is a more formidable but

probably a more efficient procedure. Their great disadvantage is that they require to be removed, and that they entail a risk of peritonitis. Usually they come away readily when the strings are pulled on, but occasionally it is both necessary and advisable to reopen the abdomen. In view of the fact that the radium sets up a mild peritonitis, and results in a discharging sinus, the latter procedure is not without risk. I employ rubber sheeting with Coffey's gauze-wick drains to pack off the radiated area until the needles are removed, so as to avoid risks from leakage and the danger of adhesions to the small gut.

If it could be shown that radiation with seeds could be made as efficient as radiation with needles there would be no question that seeds should be preferred.

Up to the present the best results with abdominal radiation have been secured with needles, which is no doubt due to the constant intensity, as opposed to the diminishing intensity of the emanation. Immediate results with seeds have been promising at first, but have been either incomplete or followed by relapse. No serious complication or fatal case, however, has followed intra-abdominal radiation of the growth with seeds. When they are available I use needles filtered with 0.8 mm. of platinum within the abdomen.

Recurrence following Radiation.—In all branches of surgical radiation it happens, unfortunately, that cases of apparent cure relapse, or that a tumour shrinks to small proportions and then resumes active growth. Such results no doubt will become less frequent with increased experience. So far as my own experience goes, a recurrence is more likely to follow after the use of radon seeds than after that of needles, and it is probable that the diminishing intensity of radon, as opposed to the constant intensity of radium, is the causal factor. It may be possible to overcome the factor of diminishing intensity by reinforcement, i.e., by adding additional radon at short intervals, which can be done in certain situations, especially when general anaesthesia is not required. Another method is to combine intrarectal seeds with perirectal needles, a method which minimizes the loss of intensity, though it does not give a uniform intensity. In several instances, when retrogression of the tumour has appeared to be complete (or nearly so) and recrudescence has followed, radiation has been repeated (in a few cases more than once) but in most instances the result has not been very satisfactory.

Without doubt, primary radiation increases radio-resistance to secondary radiation. Relapses following apparent success become more noticeable as the number of cases increases. It is evident that if we are to make further advance we must improve technique and explore the possibilities of radium in combination with X-rays, lead selenide, etc., more fully.

I wish, in conclusion, to make a few general observations. It is not unlikely that with increased experience I may modify these views. I do not wish to be dogmatic; no one who works with radium can be so.

(1) In young people, in increasing ratio from the age of 40 years onwards, rectal carcinomas grow rapidly, metastasis occurs early and the end-results of radical surgery are not good. An actively growing carcinoma in a young subject responds well to radium, far better than does a slow-growing carcinoma in an elderly subject, but evidence as to end-results, in comparison with those of surgery, is not available.

(2) If a growth is adequately barraged with radium and shows little evidence of retrogression after two months, it is probably useless to repeat radiation. On the other hand, if the growth responds to radium and retrogresses, though it fails to disappear completely, further radiation is indicated, on the ground that the dose has been insufficient in respect of amount, time, or distribution.

(3) Secondary radiations are less likely to produce a good final result than an adequate primary radiation, and are more likely to produce pain of a neuralgic type which may be very severe and may last for long periods.

(4) When the growth has been exposed by open operation, an overdose may

result in perforation of the bowel, with secondary sepsis, and when healing takes place it may be followed by excessive fibrosis and consequent stricture.

(5) The criteria of a correct dose are (i) absence of sepsis, (ii) a well-marked radium film, (iii) rapid resolution of growth, (iv) restoration of normal epithelium, and (v) limited fibrosis.

(6) Radon is less efficient than radium, but is valuable within the abdomen and within the lumen of the rectum.

(7) Apart from the possibilities of cure, radium has its value in improving both the local and general conditions of an inoperable case, so that, in some instances, operation, with prospect of a cure, becomes possible. In cases of local recurrence after excision it is an asset of great value, especially if the recurrence is treated early. It gives help to those who are beyond surgical help, and in moderate doses, has a remarkable tonic effect on the general health.

To secure a low mortality and low recurrence rate for excision of the rectum (that is to say, lower than the average) requires either a careful selection of cases, or very special experience and skill.

The treatment of cancer of the rectum with radium is still in the nursery stage. Time will show whether selection, combined with increased experience and skill, will vastly improve results in radiumtherapy, or will reveal that radium is too capricious a master, and too seldom a servant, to be reckoned with as a serious fighting factor in the campaign against cancer. Research on radio-resistance and methods of sensitization is an urgent need. It is not enough to say: "Here is a cancer of the rectum; let us excise it, or let us use radium." We ought to have an index of sensitivity and a corresponding dose index, and we ought to develop a technique that allows no uncertainty in the application of the indicated dose. For help on these lines we must look to the physicist, the biochemist and the pathologist. When we consider how long it has taken to develop the high technical standard which now exists in abdominal surgery—so high that Lord Moynihan has said we can hardly hope to advance it much further—we ought not to be downhearted.

Medicine in recent years has advanced by leaps and bounds. The biochemist has come to the aid of the physician, who no longer depends on his stethoscope or microscope for diagnosis. The physician can classify enlarged livers and spleens without the help of the surgeons. Is it too much to hope that the "big five"—medicine, surgery, pathology, biochemistry and physics—will, by team work, enable the radium worker to conduct his practice on a strictly scientific basis rather than empirically?

I can hardly doubt that, if brilliant results can be secured with radium in a small percentage of rectal carcinomas, further research, increased experience, better technique and greater skill will reduce the failures and add to the successes.

Dr. Lacassagne (Paris): With regard to the principles and practice of the Radium Institute of Paris in the treatment of rectal cancer, I am not able to bring forward any new facts. My opinion, as already published several times, is still, unfortunately, unchanged. Neither the present methods of radiumtherapy, nor the older ones, have enabled us to bring about the cure of rectal cancer, which seems to us still to be a matter of surgery.

The number of patients treated during the last ten years by the medical staff of the Radium Institute, under the direction of Dr. Regaud, may appear to be rather small; there were only about fifty cases. Most of these were very far advanced, so far, indeed, that extirpation was out of the question from the very first. But this number, intentionally limited, was sufficient to allow of our making a conscientious trial in a number of patients of each of the principal methods of radiotherapy.

Of these fifty cases of adeno-epithelioma of the rectum, some have been treated by older methods of curietherapy, either by intracavitary tubes of radium, by the

use of moulds, by that of specially constructed balloon distensors, or by intra-rectal or transperineal radium-puncture. For other patients, roentgentherapy, radium-surgery according to the method of Neumann and Coryn and finally curietherapy at a distance, with a bomb of four grms. of radium, have been tried.

This does not mean that no progress has been realized. Whereas the older methods of curietherapy by intrarectal foci or by radium-puncture have never produced any improvement and sometimes have even given the impression that the patient's condition has been made worse, the present methods relieve pain and may prolong life.

Two of our patients seem now to be completely cured, one eight, and the other four, years after treatment. I must add, however, that this good result has only been obtained with the help of surgery. One of these patients is a man, treated by X-rays in 1922, who had to be operated upon by the perineal route six months later on account of a local recurrence. The other is a woman who had a perirectal application of radium after a sacro-coccygeal excision; the irradiation was followed three months later by a perineal amputation, and a microscopical section of the excised tissue shows the persistence of cancerous cells.

The failure of radium treatment alone to effect a cure in these cases confirms the opinion we have always maintained as to the low radio-sensitivity of adenocarcinomas, especially adenocarcinomas of the rectum. How otherwise can we explain the difference between the results obtained by radiotherapy in the treatment of epitheliomata of the rectum on the one hand and of the cervix uteri on the other, when the conditions and possibilities of treatment are so much alike? This difference is the more striking when we remember that, from the beginning of radiotherapy, even with defective procedures, cures of epitheliomata of the cervix uteri were sometimes obtained: in fact the radiotherapeutic treatment of these cancers is now, beyond doubt, the most satisfactory method.

Owing to these facts, at the Radium Institute of Paris, surgery is still the line of conduct adopted in the treatment of rectal cancer. Radiotherapy is employed as a palliative in inoperable cases and then only by roentgentherapy or by curietherapy at a distance.

Mr. Stanford Cade: At the present stage of radiumtherapy it must be admitted that for cancer of the rectum and colon, a correct surgical excision gives the patient as good a chance of cure as can be hoped for. As, however, a similar statement was true for cases of buccal cancer about six or eight years ago, it is not unreasonable to believe that with advancement of knowledge and with improved technique the position may be altered within the next few years.

The first problem that presents itself for consideration is the selection of cases suitable for radium treatment. The points which influence the decision are: (1) Operability: (2) general condition and age of the patient; (3) the possibility of avoiding colostomy.

When all operable cases in patients otherwise fit and suitable for operation are excluded, one is left with the following types of case: (1) The frankly inoperable cases in which the disease is irremovable by surgical methods; (2) the operable cases in which, on general grounds, operation is contra-indicated; (3) cases in which the patients refuse colostomy; (4) cases in which pre-operative irradiation may be considered desirable.

The most important points in connection with radium treatment of the rectum are bound up with the physical aspect of radiumtherapy and the biological effect of radiation on neoplastic tissues. In this particular anatomical situation the difficulties are numerous but not unsurmountable; radium burns are more difficult to avoid because the dosage necessary to produce retrogression of the disease is very near the

limit of tolerance of the normal tissues. The cardinal points to be considered are: (1) The type of irradiation; (2) the method of irradiation; (3) the technique.

Type of Irradiation.—It is essential in this group of cases to administer pure gamma therapy. It is understood that secondary beta radiations are of necessity given off in the tissues when a multiplicity of radium foci are used interstitially. This however has no bearing on the statement that an attempt to deliver gamma rays is to be made, if improvement in results is to be anticipated. Filtration or screenage is therefore of utmost importance. It is the practice in Westminster Hospital to use needles with 0.8 mm. of platinum for the treatment of rectal cancer. The increased filtration is necessary in order both to avoid necrosis and to increase the period of irradiation. With increased platinum screenage a larger quantity of radium in relation to the volume of tissue to be treated can be employed.

Method of Irradiation.—It is recognized, chiefly thanks to the work of Dr. Lacassagne and his collaborators, that a cell submitted to irradiation varies in radiosensitivity according to its nature, its stage of development, the presence or absence of mitosis, and its secretory activity. To ensure sterility of the neoplastic cells, or more than temporary inhibition of growth, it is necessary to submit the cell to irradiation of a minimal strength during a certain period of time. There is therefore a threshold of intensity and a threshold of time which, if not reached, means failure in obtaining retrogression of the disease. The application of this conception of radium therapy to cancer of the colon and rectum has led to prolonged periods of treatment—up to ten days in interstitial methods, from two to four weeks in surface methods and six weeks in teletherapy.

From clinical experience it appears that uniform intensity is desirable, both to achieve a greater permanency of results and to decrease the number of primary failures. Uniform intensity can be achieved by the use of a radium salt. The use of radon or emanation is not compatible with uniform intensity. It detracts greatly from the advantages claimed for the use of radon seeds. Seeds, however attractive on economical grounds and in spite of their mechanical advantages of introduction and their apparent ease of distribution, lack the essential of uniform intensity.

The technique of irradiation varies with the site, the extent and the type of growth. It also depends upon the general health of the patient, the presence of obstruction and the object in view—i.e., palliation, or attempt at cure. The planning of the correct treatment requires experience in radiumtherapy and facilities to carry out the various methods.

Colostomy.—The question of colostomy is important in so far as radiumtherapy is the only method of treatment of cancer of the rectum which offers the possibility of avoiding colostomy in selected cases.

Colostomy can be avoided in growths situated in the ampullary and anal portions of the rectum if the growths are early, not extending more than half way round the circumference of the bowel. In patients with annular growths colostomy is unavoidable, and in the supra-ampullary variety it is an essential step of the treatment. As a temporary measure colostomy is of great value in the treatment of most cases, specially in the rectosigmoidal types. For therapeutic reasons colostomy is desirable to free the irradiation area from sepsis and irritation. An indirect advantage of colostomy is that the laparotomy offers an additional method of access both to the growth and its lymphatic connections.

Technique.—The cavity method of insertion of radium into the lumen of the bowel is the least satisfactory. It can only be advised as a palliative measure in otherwise unsuitable cases. Temporary arrest of the disease can be achieved occasionally, but this method is not to be selected if interstitial irradiation can be carried out and can be replaced by intrarectal needling. The interstitial method is applicable in a variety of ways: by the perineum in anal or low rectal growth, vaginally, after resection of the coccyx, or transperitoneally in high situated

lesions. The position of the growth and its extent dictate the choice of approach.

Surface treatment is limited in its usefulness to anal growths involving the perineum; it is also applicable to the inguinal glands and to recurrences after operation.

Telecurietherapy, or "treatment by the bomb," is at present under trial; it is too early either to recommend or to condemn this method. Quick, in New York, considers it the best form of radiumtherapy in this situation. One of the advantages of this method is the multiplicity of ports of entry that can be used. Four or five ports of entry will enable a total of from three to four hundred grm. hours to be given in about six weeks time.

Pre-operative irradiation is advisable in border-line cases, providing the irradiation is correctly carried out and the operation is not delayed beyond three weeks after irradiation. Delay, in the hope of obviating the operation altogether, is bad, as it renders the operation more difficult to perform, convalescence is definitely prolonged and healing is delayed.

Results.—In analysing the results of treatment it is necessary to consider separately the immediate and the ultimate results. My observations are based upon twenty-eight cases.

Immediate Results.—The rectum presents certain peculiarities in its response to irradiation which are only very rarely observed in other situations. It is occasionally seen that, although correct irradiation has been carried out, there is no obvious reaction. This absence of response is of very bad prognosis, it indicates a peculiar radio-resistance of the tumour which at present is unexplained. It accounts for the primary failures, as distinct from recurrences or partial or incomplete reactions. It is this group of cases which has led to the belief that rectal cancer is unsuitable for radium treatment. Histologically and clinically these cases are indistinguishable from radio-sensitive growths which respond well to treatment. Attempts at radio-sensitization of the tumours by various means have met with no success up till now.

With the exception of this group, the normal reaction to irradiation is rapid and very obvious. From ten to fourteen days after irradiation the lesion is seen to be covered with a thin layer of white fibrinous exudate, firmly adherent to the surface. In the cauliflower variety the mass is reduced in size; in the ulcerative variety the surface of the ulcer is smooth, clean, and shallower. Evidence of healing is seen at the periphery. Pain is remarkably diminished and hæmorrhage has stopped. On digital examination, slight mobility of the rectum is noticed and the bulk of the tumour is diminished. A month or six weeks after irradiation fibrosis is noticeable. The wall of the rectum is harder, and less elastic. In successful cases cauliflower masses have disappeared and ulceration is greatly diminished or healed. In a number of cases which respond slowly to the treatment, the disease retrogresses to a certain point and then remains stationary.

Ultimate Results.—In a small percentage of cases there is no obvious sign of disease and patients remain well up to three years and a half afterwards. In a large number of cases distressing symptoms are eliminated, palliation from hæmorrhage and pain is obtained and discharge is diminished. The growth, although still present, seems to be inactive and stationary. Metastases are late in developing and patients appear to be in good health, with no progress of disease locally, although they are still bearers of rectal cancer. But the rectal lesion is different from that in the non-treated case, in that it has lost its malignant characteristics and is of slow growth.

Douglas Quick during a period of twelve years observed and treated 710 inoperable cases, with a survival of 150 patients, some of them for periods varying from three to eight years.

Amongst my twenty-eight personal cases, the majority were failures. A few outstanding successes however are encouraging. One patient is free from disease without a colostomy, two patients are free from any evidence of disease after one and three years respectively. In five cases perineal excision was performed after irradiation, although they had been inoperable when first seen. In one of these the patient died from sepsis seven days after operation; in the other four the patients are alive and apparently well.

Abdominal irradiation presents a slightly higher operative risk than other methods, but the results are encouraging.

For cancer of the rectum, radium treatment may be the method of choice in the future, but to-day surgery has the first place.

Mr. J. P. Lockhart-Mummery: Radium treatment of cancer of the rectum must be looked upon as being still in the experimental stage. It is, however, just at this stage that a discussion such as this is of the greatest value. There are so many points of technique that require discussion and so many variations in results which want explaining. Many of the results are extraordinarily disappointing, while now and then we get a brilliant result that is very encouraging.

Filtration.—I am of opinion that filtration should not be less than 0.8 or 1.0 mm. With less filtration than this there is too much necrosis of the tissues round the needles. I have adopted, as far as possible, the same standard of needle as Sir Charles Gordon-Watson, namely, 1 mgm. per inch of needle. This is a convenient arrangement and assists in estimating correct dosage.

Time Factor.—As regards the time factor, I am sure that small doses over a long period give the best results. I believe that ten days are better than seven days, other factors being equal. Cancer cells appear to survive and recover after a short dose, whereas if continuously subjected to the rays, they eventually die; the more slowly the cancer cell is destroyed, the better the result.

The greatest difficulty at the present time is this question of dosage. The milligram-hour formula is in my judgment quite useless, as it leaves out of account the size of the growth, and no formula can be of any use unless the cubic capacity of the growth is one of the factors in the formula. It is obvious that a growth the size of a shilling, given 5,000 mgm. hours, would be tremendously over-dosed and would almost certainly slough out, together with the surrounding tissues, whereas a growth the size of one's fist would almost certainly be under-dosed with 5,000 mgm. hours. The ideal formula would be one showing the cubic capacity of the growth \times the number of milligrams of radium \times the number of hours. But as at present we have no satisfactory or accurate method of estimating the cubic capacity of the growth, it is, I think, better not to use a formula at all, but to depend on judgment, and to attempt to give 1 mgm. of radium per cubic centimetre of growth for from seven to ten days; a formula is merely misleading.

Operation of Access.—It will, I think, be admitted that this is not difficult when the growth is low down on the posterior wall of the rectum. Directly, however, that we have to deal with growths on the anterior wall, or high up in the rectum, there are very great difficulties. My own practice with anterior wall growths is to separate the rectum from the prostate in the male, or the vagina in the female, and to place lead-foil covered in rubber tissue, or some other protective, in front of the needles so as to prevent damaging the bladder or urethra, or the posterior vaginal wall. I prefer not to approach an anterior growth in women through the posterior vaginal wall itself; I believe it is better to dissect up the vaginal wall. If the needles are placed by means of an incision in the posterior vaginal wall, there will be considerable danger of producing a recto-vaginal fistula which may be extremely tiresome, whereas if the posterior vaginal wall is left intact, this danger does not

occur. For growths in the upper part of the rectum it is necessary to obtain very free mobilization. A large incision should be made, the coccyx removed—and, if necessary, a portion of the sacrum—and the rectum mobilized as much as possible so that the needles can be put in accurately and carefully. I do not pack the wound, but close it up with the threads inside, temporarily, and when the needles are removed, drain it freely in all parts. I have had no trouble from this practice, and I think it makes it much more certain that the needles keep in accurate position. The lines of spread in the lymphatics must be treated at the same time.

The greatest difficulty at present arises with the use of radium in the abdominal cavity. I think that radon seeds are the best way of dealing with it, and that needles are dangerous. Needles placed inside the peritoneal cavity produce a certain amount of peritonitis, which may be uncontrollable, and is always difficult to handle.

I do not think that a preliminary colostomy is always necessary, although it is certainly advisable if the growth has caused much narrowing of the bowel.

One of the greatest difficulties is to deal with the wound after radiation. These wounds are peculiar: they show yellow wash-leather slough of the whole surface, and are extremely indolent. Treatment with antiseptics is useless, and is liable to produce hæmorrhages. My belief is that they are best treated by very light packing with vaseline gauze, or gauze soaked in oil. Healing is always slow. I do not know of any method of hurrying it; the less these wounds are interfered with the better. Serious sepsis does not, as a rule, occur unless perforation of the bowel has taken place, and the wounds gradually heal in a matter of two or three months.

Over-dosage is very liable to give rise to excessive fibrous tissue, and many of our early failures were due to over-dosage rather than to under-dosage. In the last few cases I have treated, using small doses over a longer period, I have not found the excessive fibrosis that used to occur in the earlier cases, and the results have been uniformly better. There is undoubtedly an ideal dose, but it is very difficult to find.

Results.—The best results at present are in the early, operable cases, in which radium is used because there is some definite contra-indication to resection. I do not, however, consider that radium treatment for rectal cancer has yet given such good results that we are justified in using it as a substitute for operation. I think it may prove very useful, in conjunction with operation, in allowing more local resections to be performed: in other words, local resection of the growth and treatment of the lines of spread by means of radium. I have done this on several occasions, and thereby saved the patient from a colostomy. The results so far have been satisfactory.

The best results I have seen have been in cases of epitheliomata, and this conforms with the experience of other surgeons. There is nothing more spectacular than to see carcinoma, or epithelioma, rapidly disappear in the course of a few weeks. This disappearance generally begins any time after the first six weeks, and in a good case is then rapid. The place where the growth was is replaced by normal tissue, it becomes smooth and soft, and there is no sign of there having been a growth.

I believe this method is particularly suitable in very old people, who are not good enough subjects for operation. Such patients are saved from a serious operation, and can quite well survive the necessary operation of access. The results appear to be good and, provided the growth is detected at a fairly early stage, there will be no necessity for a colostomy. I have one patient at the present moment, a man aged 82, in whose case a growth 3 in. in diameter on the posterior rectal wall entirely disappeared in seven weeks' time, leaving the tissues in the rectum perfectly normal. I have also had a case in a woman, aged 79, in which a large epithelioma of the anus healed after two doses of radium at intervals of a month.

I believe that radium in the treatment of rectal cancer has definitely established itself as a method capable of getting rid of the growth in suitable cases. The results are at present much too uncertain to warrant its being used as a substitute for radical removal of the tumour by surgery, but it is very useful in cases in which radical operation is contra-indicated on account of age or illness, and it is of distinct value in cases which are surgically inoperable. I believe that its greatest value will prove to be when it is used in addition to radical removal, in that less extensive and less deforming operations will be possible, and that we shall be able to save the patient from a permanent colostomy.

Mr. W. S. Perrin said he would relate his experiences with inoperable growths and operable growths respectively.

He agreed with Sir Charles Gordon-Watson that one might have remarkable cases of retrogression of the growth, the patient putting on weight, and the cancer disappearing. His own cases had not ranged over any long period, and so he was unable to say definitely whether any of them could be said to be cured. Certainly many of them had been substantially relieved.

He preferred radium needles, and to insert them intra-abdominally, but they could be put in from the outside, through the skin round the anal margin, or directly into the growth through the anus. Radon seeds could be used also for these cases.

He would mention four operable cases which he had irradiated.

(I) The first was that of a strong man, aged 63, treated a year and ten months ago. The growth had been irradiated by the method which Sir Charles Gordon-Watson had just described. It was a typical adenocarcinoma, about 4 cm. in diameter, and was on the posterior wall of the rectum. The patient had had 6,000 mgm.-hours. The perineal wound had healed within a month, and the patient had returned to his work within two months. In three months' time there was no sign of carcinoma. The man had been kept under observation since then. Twenty months after operation a small swelling was found at the lower margin of the growth site. A piece was removed for section two months ago, and reported to consist of fibrous tissue and normal mucous membrane. However, he (the speaker) was not happy about that swelling, which he did not think would be there if all was well.

(II) Eighteen months ago he had treated a man, aged 48, who had a similar carcinoma. The same method as that in the last case was used; 6,800 mgm.-hours were given. The perineal wound was substantially healed within a month, but two small sinuses did not heal until four months later. The major portion of the growth had vanished within three months, but for months afterwards three small nodules remained at the lower edge of the site of the growth, presumably because sufficient irradiation had not been given. He tried to abolish these nodules with radon seeds, but did not succeed. About two months ago, however, he had abolished them by diathermy.

So that these two patients were going about without colostomies and, so far as could be told by means of microscopical examination, there was no carcinoma remaining. How far that immunity would persist he did not know.

The third case was that of a thin woman, aged 60, who had a carcinomatous ulcer, of the same type as that in the other cases and of the same size. He (Mr. Perrin) had carried out the treatment ten months ago, giving 6,800 mgm. hours, but the growth had been almost unaffected. The patient had remained in hospital for two months, and was then sent to a convalescent home, with the wound practically healed. Later, however, she returned with the wound broken down, and a perineal fistula present, faeces being discharged through the perineal wound. Altogether she

was in a lamentable condition. He (the speaker) had performed colostomy. The wound had not yet healed.

(IV) The fourth case was dealt with at about the same date as the third. The patient was a thin woman, aged 56. The growth was larger than that in the last case. The total irradiation was 7,600 mgm. hours. The patient suffered severe pain. (None of the other three had pain.) The carcinoma never disappeared and the perineal wound had not healed, so that this patient had been obliged to have a colostomy.

After his experience in these last two cases he had not felt it right to recommend anybody to have radium treatment for an operable growth of the rectum if surgery was at all possible.

These four similar carcinomatous conditions had been treated by a precisely similar method. Two of the cases had done reasonably well, two had been failures, yet all were treated by the same person and the same method. How was one to place one's finger on the weak spot? He was waiting for a patient to refuse a colostomy before he treated an operable case in this way. The patients in these four cases had all refused colostomy.

Mr. Lionel Norbury said he would emphasize the difficulty of predicting the effect of radium treatment in any given case of carcinoma of the rectum. It was a curious fact that apparently identical cases reacted differently to radium, one type being radio-sensitive and the other radio-resistant.

He might mention the case of a woman, aged 29, with extensive carcinoma of the rectum, involving the vagina and pelvic peritoneum. This was treated by colostomy followed by posterior barrage of radium and also needling *per vaginam*, with a total dosage of 10,000 mgm. hours. Much pain resulted, the patient gradually became weaker, and died five or six weeks afterwards from toxæmia. Post-mortem examination revealed colloid carcinoma, with no evidence of fibrosis or any indication that radium treatment had been employed. Sir Charles Gordon-Watson had said that growths in young people usually responded well to treatment with radium, but it had not been so with the case in point.

One explanation given as to the cause of radio-resistance was the presence of a large amount of colloid material in the tumour. Colloid or mucoid degeneration was, however, not uncommon in rectal growths.

He also showed a case of rectal carcinoma treated by radium and subsequent excision. Radium needles were inserted *per vaginam*: the total dosage was 6,000 mgm. hours. Three months later the growth had increased in size. The rectum, with a portion of the posterior vaginal wall, was excised. The specimen showed a broad area of scar tissue in the middle of the ulcer, but growth still remained at the periphery.

It was difficult to give a satisfactory barrage by the vaginal route in such cases. Undoubtedly such a growth should have responded well to radium treatment if the barrage had been more intense.

He hoped that further research would be made with a view to finding means of increasing the radio-sensitivity of adenocarcinomatous growths. Fluorescin, either applied locally or administered internally, seemed to increase the sensitiveness of growths to X-rays, and this might also apply in a certain degree to radium-therapy. It had been shown that colloidal copper and lead tended to increase the sensitivity of growths to gamma rays.

He now showed a drawing from a case of extensive recurrent growth in the perineum, following excision of the rectum. A great deal of sepsis had been present. Microscopical examination had revealed an adenocarcinoma. Treatment with radium needles into and around the growth (11,000 mgm. hours) had produced great

improvement. At a second treatment, carried out three months later, the tissues were found to be extremely fibrous and needles could only be inserted with great difficulty, thus illustrating the fact that the degree of fibrosis was dependent on the degree of sepsis.

Mr. E. T. C. Milligan said that it was only fair, in this rather dismal—yet hopeful—discussion on the treatment of carcinoma of the rectum by radium, to point out that it was the method one would select in the confident hope of securing good results in carcinoma of the anal canal. Before radium was available for these patients it was their fate to lose the rectum and go through life with an artificial anus. He had, however, treated a series of cases of this nature with radium and his only difficulty and anxiety had been with regard to that portion of the growth which extended upwards into the rectum. To destroy this portion further measures were sometimes required; the rectum, however, was saved.

Another aspect of the subject worth mentioning was that of radium necrosis, or radium burns, which occasionally followed treatment of growths of the rectum and anal canal when large and repeated doses were required. A child aged $4\frac{1}{2}$ years who, for some obscure reason, had been treated with radium for a rectal polyp had been admitted to his (the speaker's) hospital with a radium burn (1 in. in diameter) in the anal canal and rectum, and was, consequently, suffering great pain. Dr. James, of America, had informed him (the speaker) that if the radium burn were converted into a diathermy burn, healing and relief of pain would result.

Dr. James (U.S.A.) said that in converting a radium burn into a diathermy burn, coagulation must be carried out to the complete depth of the burn, otherwise relief would not ensue in the deeper part. It had fallen to his lot to have a number of radium burns to treat, and he had found the method a very satisfactory one. There was rapid healing, just as rapid as in the case of an ordinary open wound.

Mr. Turner Warwick said that amongst the chief points in connection with the development of radium treatment was the question as to whether a large dose should be applied for a short time or a smaller dose for a longer period. In the case of certain favourable growths in other situations, it had been found that a small well-screened dose applied for a long time had given excellent results with minimal discomfort and risk to the patient, and this procedure had become that of choice when needles were used.

The question of the sensitivity of individual growths was, however, one to which attention was necessarily directed at the present time. The parts played here by the growth-cells themselves and by the stroma, which represented the reaction of the host, were as yet little understood. In general, it had been found that immaturity of the cells of the growth favoured radio-sensitivity. Again, alterations in the density of the stroma, as a result of ineffective radium treatment, were associated with increased radio-resistance. In connection with the anal canal itself it was known that the two types of cells lining the canal reacted very differently to the same short-time exposure to a large dose of radium. It might yet be found that the best treatment for growths known to resist the present technique was a heavier dose for a short time. In his opinion we had reached the stage when all growths included in future series presented for general consideration should, as far as possible, be graded histologically as well as anatomically. He thought the St. Mark's Hospital classification so ideal anatomically that it tended to concentrate general attention too much in this direction. A definite advance in our knowledge of the surgery of breast cancer had been made by the correlation of anatomical

grouping with histological type, and no harm could result if this were attempted in rectal cancer. It was true that the removal of an adequate portion from the advancing edge of a rectal cancer might conceivably tend to permit or stimulate more rapid growth, but it was less justifiable to neglect an aspect of perhaps primary importance.

Dr. Cuthbert Dukes said that the classification of tumours into the groups A, B, C, had little to do with adaptability to radium treatment; it was made for purposes of prognosis. It might be useful to the surgeon in five years' time in telling him how his technique could be improved.

Sir Charles Gordon-Watson had referred to the work which had been done at St. Mark's Hospital, and there were points in connection with that classification which had been of interest in the question as to the spread of cancer. For instance, there were no lymphatic metastases until the growth had spread by direct continuity into the perirectal tissues. That was a very important finding.

Another point concerned the classification of tumours to which Mr. Turner Warwick had referred, namely, by grading according to the type of cell. There was a method of classification used abroad, according to the degree of differentiation of a malignant cell. Cancers could be grouped according to this factor in groups (1, 2, 3 and 4). Such a classification was not of use, however, in connection with rectal growths, which should not be classified until after, because material which was on the surface of a rectal cancer was always grossly infected by bacteria, and a small portion would not give a proper and reliable picture of the actual growth.

Mr. Cecil Rowntree (President) said that many discussions held by this Sub-Section had exercised considerable influence on contemporary surgical practice, and had added greatly to the knowledge of surgeons. The present one was a very considerable contribution to the subject of radiumtherapy. During the discussion on Sir Charles Gordon-Watson's Presidential Address on this subject, in November, 1927,¹ the cases shown had made a great impression. They had been few in number, but enough to make one realize that here was something which had not been seen before—patients apparently cured of carcinoma of the rectum, and without colostomy, representing a great advance. To-night they had heard from several sources of cases which had given results equally good. True, there had been bitter disappointments, but all pioneers had to suffer disappointments, and sometimes had to regret the results of their treatment.

From this discussion it seemed clear that radium held out high hopes of great relief, and perhaps the word "cure" could be used in some of the cases. As all the speakers had shown, the difficulties were very great, for the treatment was still experimental.

Surgeons were feeling their way, and they were all faced with the grave difficulty involved in advising patients, especially educated patients, as to the best form of treatment to adopt. Many of these patients had read of radium treatment, and were anxious to avoid operation, and it was hard to explain to them the difficulties in arriving at a decision.

As he (the President) interpreted the discussion, surgeons were not yet in a position to urge their patients to have radium treatment for operable growths. There were, however, many patients for whom radium might legitimately be advised, aged and feeble people for instance, and those who had some kind of complication. An important class was that of young people with carcinoma of the rectum; he did not think that in any patients under 30 years of age there was a reasonable prospect of freedom from disease after radical operation. There was therefore a fairly large

¹ See footnote p. 93.

class of cases in which to make use of more or less experimental methods. In the operative treatment of rectal cases one was always faced with the unwelcome prospect of colostomy, a prospect which influenced the educated classes very much and naturally caused them to clutch at any method which held out a chance of saving them from that procedure. It was to be hoped that during the next few years intensive team work would throw valuable light upon the question of varying radio-sensitivity, and solve the problem as to why some of these cases did well with radium, and others did badly.

Section of Dermatology.

[May 15, 1930.]

Dermatitis Papillaris Capillitii.—F. A. E. SILCOCK, M.D.

This patient, a stout man, aged 56, states that the eruption began five years ago, following a gnat-bite on his neck. He has had several isolated, firm, fibrous nodules and pustules along the hairy margin of the scalp in the occipital region. These have gradually coalesced into a projecting keloidal mass, measuring about two and three-quarter inches vertically by six inches long horizontally, on the nape of the neck. Most of the hairs over the affected area are absent, whilst those that remain are extracted with difficulty. There is an occasional small pustule present.

Discussion.—Dr. HALDIN DAVIS asked whether any Member had had any experience of surgery in the treatment of this condition; he had just been informed by a surgeon that he had twice excised lesions of this nature with great success. Personally he (the speaker) would have been inclined to employ X-rays.

Dr. H. MACCORMAC said he thought that before the idea of any surgical procedure was entertained X-ray treatment might be tried, a method which he had found entirely satisfactory in similar cases.

Dr. SILCOCK (in reply) said that he himself favoured the suggestion of treatment by X-rays. He did not think that the condition warranted—nor would the patient agree to—surgical excision of the mass.

Dr. W. J. O'DONOVAN said he hoped that surgical treatment for this condition would not be advocated. The results of X-ray therapy were satisfactory and safe at the present time.

Dr. F. PARKES WEBER said the chief interest with regard to the results of excision was that it proved that those cases, at all events, which had been successfully treated by excision had not been cases of genuine keloid, i.e., that they had not been genuine keloid supervening on acne.

Civatte's Poikilodermia.—R. T. BRAIN, M.D.

E. K., a married woman, aged 54, first noticed a pink discoloration on her neck seventeen months ago. This slowly spread to the sides of the face and around the eyes. A similar, but slightly scaly eruption also appeared on the forearms and feet. There was some intermittent irritation of the neck, but there were no other subjective symptoms. Dr. O'Donovan took the patient into hospital for investigation.

There is a mottled reddish brown pigmentation of the skin of the whole neck, sides of the face and the forehead. On close examination, a fine reticular pattern can be recognized, but there is less atrophy, and none of the telangiectases usually

seen in this condition. The eruption on the forearms and feet consists of larger brownish macules. There is a slight degree of xerodermia.

Wassermann reaction negative.

Histological examination of a piece of skin removed from the side of the neck showed: Thinning of the epidermis with patchy hyperkeratosis; a well-marked stratum granulosum; much degeneration of the lower layers of epidermis with many hyaline bodies, presumably degenerated cells; absence of interpapillary process; a chronic inflammatory process in the dermis with pigment granules in round and spindle cells.

In February, 1930, she had a severe febrile illness, thought to be influenza. The pigmentation is now less marked, and there are a few flat pink papules on the left wrist.



Civatte's Poikiloderma showing unusual distribution.

Ectodermal Defect, Tylosis, and Dystrophy of the Nails.—R. T. BRAIN, M.D.

The patient, a single woman, aged 28, who attended Dr. O'Donovan's Clinic at the London Hospital, was completely bald at birth, and since then the hair of the scalp has been scanty and in tufts, with large smooth bald areas (fig. 1). The eyebrows are thin and hair has not appeared on the pubes. The nails on the fingers and toes have been deformed since birth. They are thickened and discoloured, beak-like in shape, and loosely attached to a nail-bed, which shows some hyperkeratosis (fig. 2).

For three years the patient has noticed horny plaques on the palms and soles. This gross hyperkeratosis is rather linear in distribution, and on the palms it runs along the ulnar side and then turns at right angles across the main palmar creases



FIG. 1.—Ectodermal Defect. Alopecia.



FIG. 2.—Ectodermal Defect. Dystrophy of Nails

(fig. 3). The plaques are thick, yellow, somewhat translucent and well defined, but here and there the skin around shows a similar appearance, with an exaggerated pattern. Elsewhere the skin is normal in texture and appearance. No defects of the teeth or eyes could be found. The menstrual periods began when she was aged 17 and have been regular.



FIG. 3.—Ectodermal Defect. Tylosis.

The parents and three other children are normal and healthy.

Dr. F. PARKES WEBER said he believed that the change in the nails seen in this case had been described as congenital hyperkeratosis of the nail-beds. It was one of the known familial lesions, and though there was no family history in this case, it was of the same congenital-developmental class; he took it that the tylosis defect also belonged to the same class, though in the present case it had been late in showing itself.

Erythema Perstans Gyrate in a Tuberculous Subject.—J. M. H. MACLEOD, M.D.

Patient, a man aged 37, born in Scotland, has been in India and Burma from 1919 to 1929. Has not had malaria or syphilis (Wassermann reaction negative three times), but has had dengue fever.

In May, 1928, while he was at Rangoon, a red irritating rash developed on the left arm. This increased and spread over practically the whole of the body and limbs, until it reached its present extent, a few months ago.

The eruption is of the type of persistent gyrate erythema with extraordinary symmetrical patterns of lines, circles and gyrate figures, depicted on a slightly inflamed skin by raised erythematous borders about one-eighth of an inch wide.

In addition, the skin of the palms of the hands and soles of the feet has become hyperkeratotic, and the nails are opaque, thickened, and frayed at the edges. Examination of scrapings for fungi from the skin and nails gave negative results.

In June, 1929, he was admitted to a military hospital in India for treatment of the skin condition, and while he was there symptoms of pulmonary tuberculosis developed, and consequently he was invalided home, and is now under treatment in a sanatorium in Norfolk.

There is extensive tuberculous involvement of both lungs and of the larynx, and there is evidence of intestinal tuberculosis. The patient suffers from night sweats, and irregular fever; tubercle bacilli have been found repeatedly in the sputum.

An examination of the faeces showed no ova or protozoa; a blood examination revealed no parasites. A blood-count showed 23% of eosinophils, associated with an increase of white blood-cells.

Discussion.—Dr. W. J. O'DONOVAN said the only similar case that he could recall was one of mycosis fungoides with serpiginous eruption, shown by himself at a meeting of the Section in December, 1923.¹ That patient had had a bright pink eruption, of a serpiginous convoluted pattern, which had persisted for thirty years. When shown, the patient had also a recent tumour. A similar symmetrical ringed eruption, but of much shorter duration, had been shown by Dr. Wigley in a case of congenital syphilis. The persistent ringed pattern reaction was an established possibility in any form of granuloma, and he suggested that this particular case might be benefited by a one-third pastille dose of X-rays to all the lesions. This treatment should be spread over three days, to obviate shock.

Dr. F. PARKES WEBER said the pattern of this dermatosis, which reminded one of the tattoo-patterns of certain savages, was much the same as the patterns² in erythema iris in young people, though in the latter cases the eruption was less chronic. He did not think it had any specific connection with tuberculosis. He agreed with Dr. O'Donovan that this might turn out to be a premycotic condition, and it would be interesting to see the result of X-rays and to ascertain the nature of the cellular infiltration by a "biopsy."

The PRESIDENT said that the case reminded him of one which he had shown at the meeting held in December, 1929,³ that of a small child with a gyrate erythema which Dr. Gray had considered to be dermatitis herpetiformis. It was accompanied by bullæ and there were some bullæ in the present case. In his (the President's) case no cause could be found for the condition and no treatment was of any avail until a stock streptococcal vaccine was administered, when a marked improvement resulted and had been maintained.

Dr. A. M. H. GRAY said there was a slight resemblance between the present case and one which he had shown before the Section in November, 1929.⁴ In that case there had been curious incomplete rings, with a distinctly raised border, and certain of the lesions showed a tendency to blister. A second case was shown by Dr. Goldsmith, similar in some respects, but having, in addition, a plum-coloured tumour.⁵ Dr. Dore had suggested that his (the

¹ *Proceedings*, 1923, xvii (Sect. Derm., 49).

² F. Parkes Weber, "A Note on Erythema Iris," *Brit. Journ. Children's Dis.*, London, 1918, xv, p. 115.

³ *Proceedings*, 1929, xxiii, 417 (Sect. Derm., 23).

⁴ *Proceedings*, 1929, xxiii, 351 (Sect. Derm., 7).

⁵ *Ibid.*, 356 (Sect. Derm., 12).

speaker's) case was one of mycosis fungoides, but the histology at the time did not suggest that. In Dr. Goldsmith's case the plum-coloured tumour, which was removed, had been much more suggestive of mycosis fungoides. Though the individual lesions were much larger and thicker, and more noticeably raised, yet there was a certain similarity in the method of growth and spread to that in Dr. MacLeod's case. He admitted that Dr. Goldsmith's case strongly suggested the possibility that Dr. Dore was right about his original case.

Acne Agminata.—G. B. DOWLING, M.D.

F. B., male, aged 33. When first seen at the West London Hospital three months ago had a large number of typical brownish yellow opalescent papules on the cheeks, chin, and right lower eyelid. The condition had been present three months, and was progressing. The von Pirquet reaction for bovine tuberculin was positive, for human tuberculin strongly positive.

He has had weekly injections of solganol since February 24, 1930: 2.6 grm. altogether.

Many of the lesions have involuted, and no fresh ones have appeared. Several, however, notably those on the right lower eyelid, have remained stationary.

I think it unlikely that gold will clear up the condition altogether, but it has certainly had a beneficial effect.

Acnitis.—LOUIS FORMAN, M.D.

Mrs. B. J., aged 41 (Dr. Barber's case). Has had diabetes; no evidence of this disease now.

Seen first in February, 1930. She then gave a six weeks' history of the eruption; numerous small rounded brownish papules situated on hair-margin of scalp, eyebrows, upper lip, round nose, chin, and outer margin of orbits. Some of these had become necrotic. On compression they were seen as translucent areas of a yellowish-brown tint.

Clinical examination of chest, negative. Skiagram showed "glands at the roots." Microscopical section of a nodule showed tuberculous granulation tissue.

A weak positive tuberculin reaction with old tuberculin 1 in 5,000, intradermally.

Treatment.—Solganol, 1.1 grm., has been given up till the present time and some improvement has resulted.

Discussion.—Dr. H. W. BARBER said that he would like to hear the views of Members as to the exact place of this condition in the tuberculous group of eruptions. Schaumann did not regard this as a tuberculide, but as a "missing link" between lupus vulgaris and the true tuberculides. It was very difficult to explain the distribution, which, he believed, was always the same. He had discussed the condition with Dr. Adamson, who was sceptical about its tuberculous causation, but cases, he thought, had been described in association with advanced phthisis, in which the nodules came out acutely, and in some instances guinea-pigs had been successfully tuberculized with material from the nodules.

Dr. A. M. H. GRAY said that his views on this matter had become modified as time went on. It seemed that nearly all these cases presented fairly well-marked positive tuberculin reactions. Arndt had showed him a case in Berlin in 1914, the sections from which had revealed tubercle bacilli in considerable quantity. He (Dr. Gray) did not think that the eruption in the present case was a tuberculide in the ordinary sense. There was entire failure on the part of the lesions to break down, whereas that was a marked tendency with all tuberculides of that type and size. He admitted that for a long time he believed it to be a variety of sarcoid (Boeck's miliary lupoid), but he thought now that it was a question whether Boeck was right in including these cases amongst the sarcoids. Schaumann believed he was wrong, and claimed that the cases were samples of Tilbury Fox's "miliary lupus." It was difficult to describe these cases as lupus, but it seemed as if they were an active form of tuberculosis. The question was whether they were not dealing with more than one condition, because some of these cases had been carefully examined, but no trace of tubercle bacilli had been found in them. Clearly, this was not the ordinary acne scrofulosorum occurring on the face. Some years ago he had shown at a meeting of the Section

a case of *acne scrofulosorum* in a child,¹ with lesions on the face of the same type as in other parts of the body. They were acuminate and necrotic, and left characteristic small pitted scars; altogether a different picture.

Dr. BARBER said that Schaumann had dealt with the point raised by Dr. Gray, and had said that one could not separate the necrotic type of lesion from that which did not necrose, and that even in the papules, which were not clinically necrotic, one could see areas of necrosis microscopically, in the tissue of the granuloma. He (the speaker) thought that Schaumann was right, because in the same case one might see these lupoid nodules with no trace of necrosis, mixed with lesions in which a central pustule developed, with a necrotic centre.

Dr. H. MACCORMAC said that in 1912 he had showed a case of typical *acne agminata*,² one of the nodules of which was afterwards excised and inoculated into a guinea-pig, but with a negative result. He thought tubercle bacilli could not have been present in the excised papule, in view of the susceptibility of the guinea-pig to tuberculosis.

Dr. G. B. DOWLING said that in all these which he had seen there had been yellow pustules, like *acne* pustules, on some of the lesions, and he regarded them as due to secondary septic involvement, without true necrosis of the actual *acne agminata* lesion. In one case he had had a section cut, in which a more perfect tuberculous histology could not be imagined—caseation, giant cells, epithelioid cells, etc. A portion of the excised lesion was also injected into a guinea-pig with negative result, but he did not think that was against the tuberculous cause of *acne agminata*.

Hypodermic Sarcoid, Darier-Roussy Type.—LOUIS FORMAN, M.D.

Mrs. E. S., aged about 33. (Dr. Barber's case.)

Noticed numerous subcutaneous nodules on arms in 1921. These disappeared after persisting for a year. Three months ago subcutaneous nodules appeared on legs and later on arms.

Seen in March, 1930: about six nodules present on legs and five on extensor surface of each arm. Skin on leg had become involved, being red, indurated and incorporated with underlying infiltration.

Quite healthy otherwise. No family history of tuberculosis. Tuberculin test with human old tuberculin: positive reaction.

Clinical and X-ray examination of chest, negative. Skiagram of bones of hands, negative.

With 0.46 grm. of solganol a definite improvement was noted. The arm lesions disappeared and the larger areas on the leg have become smaller and have definitely softened in their centres.

New small nodules have appeared during the last few days on the legs.

Discussion.—Dr. G. B. DOWLING said that he would like to hear Members' views on the position of this type of sarcoid. He regarded it as more closely related to Bazin's disease than to Boeck's sarcoid.

Dr. BARBER said that Schaumann was insistent on the point mentioned by Dr. Dowling, viz., that hypodermic sarcoid of the Darier type was a tuberculide, closely related to Bazin's disease, and had nothing to do with true sarcoid.

Dr. A. M. H. GRAY said he did not think Schaumann was right in the point just mentioned by Dr. Barber. In typical cases of lupus pernio there were subcutaneous lesions which were indistinguishable from the Darier-Roussy type of sarcoid. He had a case in which these were present to a marked degree, and this had been reported by others. This being so, if Schaumann's view were correct, it could not be true tuberculide. One had also to consider the work of Guy, who had produced these lesions with injections of colon bacilli. He (Dr. Gray) considered that these subcutaneous sarcoids represented a group of reactions, rather than a specific disease. Some of the lesions might be of tuberculous origin. He had always been interested in the question of the differentiation between the Darier-Roussy sarcoid and the hypodermic sarcoid of Darier. The former, Darier said, occurred mostly on the trunk, and in a rosary pattern, and in the other the lesions were more numerous and not grouped, and were chiefly on the lower limbs. The present type was not very uncommon;

¹ *Proceedings*, 1923, xvi (Sect. Derm., 101).

² *Proceedings*, 1912, vi (Sect. Derm., 45).

it certainly belonged to the group of hypodermic sarcoids of Darier, and could not be clearly distinguished from the cases Whitfield had described as the "erythema induratum of middle-aged women."

Syphilis of Scalp.—L. HARTSTON, M.D. (for Dr. W. J. O'DONOVAN).

J. E., male, aged 55. Has had nodules and ulcers on the scalp for three months past.

Discharging sinus inner angle right upper lid. "Gonorrhœa" thirty years ago. No history of previous skin trouble or injury to scalp.

First seen at St. Paul's Hospital, April 11, 1930, presenting foul crusted yellow ulcers, some clean cut, some nodular, almost covering scalp.

Wassermann reaction in blood-serum strongly positive.

Steady improvement on treatment with novarsenobillon (three injections; total, 2.4 grm. to date).

Favus.—M. SYDNEY THOMSON, M.D.

The patient, a girl, aged 15 months, came to hospital for the first time on May 14, 1930. It is said that a "spot" appeared on the right arm four days previously and that it has rapidly grown to its present size. The lesion consists of a circular raised "scab" half an inch in diameter. Close examination reveals the presence of numerous scutula, typical in shape and colour, growing on dried exudate. One "cup" was immediately taken and examined microscopically. The specimen, shown to-day, reveals one solid mass of fungus. Cultures were made at the same time. The source of infection is not obvious, but it is said that the father has similar lesions on his neck, and also that the house is overrun by mice.

Dr. GRAHAM LITTLE said that he had had a case clinically resembling this, in which the diagnosis and the source had been confirmed by the finding of the fungus both upon the skin of the patient, and about the mouth of a mouse caught in the room in which the patient had lived. The culture subsequently obtained from the patient's skin showed a growth typical of mouse favus.

Postscript.—The father has been seen and reveals disc-like healed areas of new epidermis only. The only mice obtained were free from infection. The culture proved to be *A. quinckeanum*.—M.S.T.

Adenoma Sebaceum, Pringle's Type, with Fibromata on Trunk and Scalp.—E. G. GRAHAM LITTLE, M.D.

The patient, a girl, aged 18, has an extensive eruption of small adenomatous tumours upon the face, with a definite reddening, typical of a group of cases to which Pringle's name has been attached. In addition to the sebaceous tumours there are numerous fibromata upon the trunk, and a much more uncommon, perhaps unique, symptom in the form of a plaque about the size of a five-shilling piece of hard—almost warty—growth, which is in all probability also a fibroma. Owing, no doubt, to its presence upon the hairy scalp, this patch is frequently liable to surface suppuration, which attracts the attention of the patient, but the underlying fibromatous mass has most likely been present since birth, although the history of congenital origin is not so clear as is that of the fibromata on the trunk and the sebaceous tumours on the face. There is no marked mental deficiency, such as has often been recorded in these cases.

Lichen Planus associated with Lichen Spinulosus and Cicatricial Alopecia of the Scalp, Pubes, and Axillæ.—E. G. GRAHAM LITTLE, M.D.

This case affords another corroboration of the ascription to lichen planus of the syndrome "folliculitis decalvans with lichen spinulosus." The patient, a married woman, aged 24, noted, as a first development, areas of baldness upon the scalp in October, 1929. Besides the loss of hair there was considerable itching. Three months later she noticed upon the pubes an eruption of spiny papules like those now

extensively distributed upon the body. The hair on the pubic region and on the axillae was shed in the same way as that upon the scalp, and areas of cicatricial alopecia are now present in those parts. There are now large areas of the body, especially of the trunk, covered with typical lichen spinulosus lesions with some quite definite papules of plane lichen planus, but there are no lesions upon the mucosa of the mouth or vulva.

(?) Parapsoriasis en Plaques: Case for Diagnosis.—E. G. GRAHAM LITTLE, M.D.

The patient is a man aged 38. The history is that some of the patches of circumscribed dermatitis present over large areas of the lower part of the trunk and the limbs have persisted since 1917, others coming in the interval, and none disappearing spontaneously. The clinical appearance and the long duration of these patches suggest a diagnosis of parapsoriasis en plaques, but there is a more recent development, within the last year, of a linear streak, about 8 in. long, on the right shoulder, formed of what appear to be fairly typical papules of lichen planus. There are no lesions in the mouth. The large areate patches do not clinically suggest the diagnosis of lichen planus, but the presence of linear lichen planus makes that diagnosis of these lesions perhaps preferable to assuming the co-existence of another disease.

Dr. A. M. H. GRAY said he did not know whether the patches in this case could be called genuine patches of parapsoriasis en plaques, they did not quite accord with what one usually saw in such cases. Parapsoriasis en plaques had a tendency to form polygonal patches, but those in this case were rounded and ill-defined, while the edges were not so sharply cut, neither was there the same linear spread up the body. Perhaps the case might be one of lichen planus.

Dermatitis Artefacta.—E. G. GRAHAM LITTLE, M.D.

The patient is a girl, aged 17, a dressmaker, seen for the first time this morning in the Skin Department at St. Mary's Hospital, when she showed a series of excoriations covering the left arm from the shoulder to the wrist. The shape of these lesions is nearly uniform, the excoriations being about three-quarters of an inch long by half an inch wide, with a long axis in the position where the finger could be drawn along the skin. The patient has been under the care of Dr. Cutner, of Chelsea, since 1927, and the curious history given is that the recurrences take place with great regularity at the monthly periods. There is no definite anaesthesia of the palate, as has been noted in so many cases.

Schamberg's Dermatitis.—H. MACCORMAC, C.B.E., M.D.

The patient, a man aged 53, subject to bronchitis in winter: otherwise nothing of special note in his general condition.

Two years ago the eruption began on the left ankle as a brownish red patch. He attended a general hospital, where the lesion was frozen with carbon-dioxide snow. This caused an unusually severe reaction followed by abscess formation.

Present condition: On both legs there are a number of pigmented lesions of varying extent. They first appear as groups of minute red spots not removable by pressure, which gradually develop into patches of reddish brown colour. All forms are represented in the present case, from collections of a few "cayenne pepper" macules to brownish areas the size of the palm, in which the red spots can be clearly seen, especially at the periphery. There is a little superficial scaling. The area originally frozen has been considerably modified by the treatment and subsequent infection, and is scarred in places. Subjective sensations of itching and burning are complained of.

This case corresponds with the original description of Schamberg's dermatitis, and appears to be a genuine example of the disease.

Discussion.—Dr. A. M. H. GRAY said he wondered whether these lesions were primarily pigmented. His own view was that they were purpuric, i.e., that first there was vascular dilatation and then hæmorrhage. He would have said that Schamberg's disease was always a pigmented condition.

The PRESIDENT said that he agreed with Dr. Gray. He thought the patches were of a darker colour in the centre, and did not display the uniform brownish colour which was usual in Schamberg's disease.

Dr. PARKES WEBER said he thought that the primary red punctiform lesions at the margins of the plaques in this case were identical in appearance with the elementary punctiform lesions seen in serpiginous angioma.

Dr. GRAY, replying to Dr. Parkes Weber, said that the two diseases were distinct. He agreed that the early lesions looked like those in angioma serpiginosum, but in that condition the lesions spread without producing any pigmentation, and remained of the same character throughout. He did not regard the present case as one of Schamberg's disease, but as a purpuric condition.

Section of Tropical Diseases and Parasitology.

[April 3, 1930.]

Malaria, Women and Quinine.

By G. W. THEOBALD, F.R.C.S.Ed.

THE purpose of this paper is to open a discussion on malaria and particularly to consider the disease as it affects women. I am not in any sense of the word a "malariologist"—the very word frightens me—but I want, as a gynaecologist who has treated and suffered from malaria, to make a few simple observations which may be provocative.

The whole subject of European women in the tropics is profoundly important. I do not think many would disagree with me when I say that the environment—spiritual, psychical and physical—is bad for men but much worse for women. The number of such women is always small relative to that of men, and they do not, as a rule, proceed to the most malarious zones.

It must be remembered that while all European men proceeding to the tropics are forced to submit to a medical examination, the majority of women proceeding East go as wives or brides and are not necessarily medically examined.

I do not wish to insist that all such women should be medically examined—but I do wish to advocate two principles: (1) That doctors when examining male candidates should point out to them the expediency of having their wives and families examined, and should indicate the risks incurred. (2) That women should invariably be examined by doctors who have had experience in the tropics, and preferably by gynaecologists, because I have seen many men and women passed as fit for the East by physicians at home, when even laymen with tropical experience could say that they would not "wear well." Women aged over 50 or under 25, women with blue eyes, fair hair and a fair skin, highly-strung women of a nervous temperament are unsuitable for a life in the East.

I suggest that women should be examined by a gynaecologist because it is essential that conditions liable to cause obstetric and gynaecological complications should be discovered and corrected, or the woman advised to proceed to some suitable centre in due time for her confinement. At this examination it is essential to examine the teeth and to advise the woman about clothes, diet and the sun. Europeans in the East are so careful about the sun that they may get "sunstroke" when they return to England. It is surely time that they were advised to take early morning sun baths, and to allow as much of their bodies to be exposed to the early morning and late afternoon sun as possible.

I attempted, for the purpose of this paper, to obtain some statistics to show what proportion of European women became infected with malaria while abroad, but was singularly unsuccessful. No such records are kept by the Colonial Office, the India Office or the War Office.

The most interesting and valuable information I received was from Dr. Howard Cook, physician to the Church Missionary Society. He is of the opinion that every man and woman who proceeds to a malarious country has the infection at some time or another. On two occasions in recent years he has found typical crescents in the blood of women who assured him that they had never had malaria. He states that malaria is responsible for 15% of the deaths in Uganda. During the last ten years (1919-1929) no woman missionary has died from malaria, but 7 out of a total of about 800 have been invalided home with this disease. All the missionaries of this Society who proceed to malarious countries are advised to take five grains of quinine daily. It is therefore probable that in any given place women are infected as frequently as men, and it is only because there are more European men in the tropics and they go into the more dangerous malarial zones that so many more men than women die from malaria.

Anophelines, as a rule, bite between the hours of sunset and sunrise, or, roughly, between 6 p.m. and 6 a.m. For about five of these hours the woman is in evening dress and for the remaining time she is in bed. Evening dress consists of two silk stockings, above which there is often an area of bare thigh, and a dress which leaves both arms and a varying portion of the back and chest bare. In other words, the average European woman in the tropics leaves at last half her body to be bitten for nearly half the danger period; for the same period of time men expose their ankles, their hands and their face. Moreover, mosquitoes almost invariably prefer women to men. It is true that women sometimes wear mosquito bags, and frequently anoint themselves with some anti-mosquito preparation (although too often their skins are unable to stand the preparation). I contend that this unsuitable dress is unjustifiable, and if women want to live in the East they should wear a dress which is more or less mosquito proof—and it could be made very attractive!

While sleeping, the majority of Europeans protect themselves with mosquito-nets. I feel that it is time that malariologists expressed their unqualified disapproval of nets which tuck in under the mattress. One tosses about in the hot sultry nights, and a perspiring foot, elbow, or hand frequently rests against the net, allowing the mosquito free opportunity to bite. It is perfectly simple to support the net on a frame, so that it drops down to the floor and does not come within a foot of the edge of the bed. I suggest that this matter and the subject of dress merit earnest consideration.

It is obvious that where the houses are adequately screened, or where people sleep in "mosquito houses," these remarks do not apply. I personally have never even been in a properly screened house, and it is true to say that screened houses are built by Americans and avoided by the British. They do, undoubtedly, lower not only the malaria incidence, but that of other mosquito and fly-borne diseases. They are, however, expensive—need to be built by experts, and—if improperly screened houses are any criterion—are extremely stuffy. It is fair to add that "mosquito houses" and screened rooms have been made much safer since the introduction of "Flit" and "Bono," by means of which the imprisoned mosquitoes may be killed.

It is impossible to raise the resistance of the individual to malaria by any known means—because the resistance factor is an abstract conception. It is, however, fair to assume that a state of health which is below par is liable to be associated with a lowered resistance—not only to malaria but to other diseases. Tradition is a great thing and has in its many forms helped to make England great. Eastern tradition is largely a curse. A woman buys a topee at Port Said, and becomes "advanced" before she arrives at her destination. She considers it essential to give or attend dinner parties four or five times a week; cocktails and whiskies-and-sodas become essentials. She has little with which to occupy her mind, except to order around several "boys." It is *also* tradition that she must go to the hills for three or four

months every year, or return to England for the summer. I have been amazed and amused at cases I have seen. Huge, strong healthy women who burst out East, get up early and superintend gardening, play two rounds of golf a day and a few rubbers of bridge at their club, attend and give innumerable dinner parties and dances, and then, after six months of ceaseless and useless activity, disappear. Their poor husbands inform you later that their wives are unable to stand the climate for more than six months. That is absolutely true, but neither could they stand the climate of England or any other country—at that pace. This separation from their husbands has another unfortunate aspect. A sick body produces a sick mind, and sick minds separated from their homes cannot invariably beget sound actions.

The East has been rendered comparatively safe for Europeans from the physical point of view, thanks to tropical medicine and hygiene, but it is still a bad place from the mental point of view. This effect of the climate is worse where women are concerned. It is the trinity of late nights, alcohol in excess, and the absence of a definite aim and object in life, other than scrambling for social precedence, together with the impermanence of most Eastern homes, which does so much harm to women mentally and physically and makes them more prone to disease. In sharp contra-distinction to these social women are the missionary women who work harder than they do at home, do not take alcohol, and do not attend many social functions, and yet, often in most uncongenial surroundings, and without the luxuries of fans and ice, remain remarkably fit for a great number of years.

Prophylactic Quinine.—I gather that the balance of opinion is rather against taking quinine prophylactically. This question is outside the scope of this paper. The only question to be decided is whether prophylactic doses of quinine (gr. 5 daily) have any adverse effects on menstruation, conception and pregnancy.

There is no satisfactory evidence so far as I am aware that quinine has any effect on menstruation, although Dr. Howard Cook is of the opinion that it increases the amount of the flow. The European woman does as a rule lose more blood at her periods while in the tropics. Menstrual symptoms vary with the health of the woman and it would be extraordinarily difficult to prove that any drug had any effect on menstruation. The enthusiastic statements about the effects of corpus luteum on menstruation, published a few years ago, make amusing reading now that we know that the preparations used were inert. There is no reason why small doses of quinine should have any effect on menstruation, and there is no satisfactory evidence to prove that they have.

There is no evidence to prove that quinine taken by mouth affects conception. It is also safe to say that small doses of quinine have no effect on pregnancy.

The most important question that has to be considered is the effect of quinine, in doses adequate for the cure of malaria, on the pregnant uterus. I am informed that this question causes a good deal of misgiving to physicians practising in the tropics. It cannot be too emphatically stated that any disease which is liable to be progressive should be treated, whether the patient be pregnant or not. The stupid tradition which forbids a woman to have her teeth attended to during pregnancy still lingers, even though we know that it is the pregnancy, associated with an inadequate diet, which causes the trouble with the teeth. Syphilis, gonorrhœa, ankylostomiasis, dysentery, kala-azar, beri-beri and malaria, all these diseases must be energetically treated in spite of pregnancy. If malaria is allowed to get a grip on the patient, it causes severe symptoms, and may take years in a home climate to eradicate. Not only does the disease get a firmer grip on the woman, but it renders her anæmic and makes her more liable to infection at childbirth. The anæmia will also curtail her supply of milk during the lactation period.

Moreover, Blacklock and Gordon [1] state that 59 out of 155 (38%) placenta from Western African native women examined at Freetown, contained large numbers of malaria parasites (*P. falciparum*), although only ten of these women showed

infection of the peripheral blood. They also state that over 25% of the children born of mothers whose placentæ were affected died within seven days, whereas the death-rate of children born of mothers whose placentæ were not infected was, for the same period of time, only 5·4%. They suggest that toxins from the focus of infection in the placenta may be absorbed by the fœtus and cause its death in early infancy. There is evidence, therefore, that a mother infected with malaria may poison her child, and the belief is held, although it has not been confirmed, that malaria is sometimes responsible for abortion and stillbirths.

Does quinine therapy involve a risk of abortion or premature labour? The answer to this question must not be sought from expressions of opinion. The number of European women affected with malaria that any doctor in the tropics has the opportunity of treating during pregnancy is small.

Abortion is a common accident in this country. Malins [2] concludes that one pregnancy out of every six ends in abortion. One-fifth of all the deaths from puerperal sepsis in England and Wales during 1926 occurred in association with abortion or miscarriage. Schottelius [3] states that 50% of the pregnancies in Hamburg during 1920 ended in abortion. Moreover, the abortion or miscarriage may be caused by the malaria itself. In order to arrive at a satisfactory opinion it would be necessary to have three sets of figures: (1) The number of abortions occurring in a large series of pregnancies in European women in the tropics who were not suffering from malaria or taking quinine. (2) The number of abortions occurring in a similar series, the women suffering from malaria, but not taking quinine. (3) The number of abortions occurring in a third and similar series, taking quinine. Acton [4] concluded from his pharmacological experiments that miscarriage will only be caused by doses of quinine sufficiently large to poison the patient.

Quinine is used in obstetrics for two purposes: (1) To induce labour, (2) to make labour pains more effectual (i.e., in uterine inertia).

When a hospital is short of beds and a woman is thought to be at term, it is to the advantage both of the hospital and the woman to induce labour with quinine. Similarly when a woman at term is paying a large fee for a room in a nursing home, it is distinctly to her advantage to terminate the pregnancy. Moreover, post-mature children may cause serious difficulty and complications during labour. I have personally induced—or tried to induce—labour in nearly a hundred such cases. Unfortunately, many of my records are on the sea and I have only those of fifty-two cases with me. The routine adopted was to give three or four doses of quinine in 10-gr. doses, at three-hourly intervals, 2 oz. of castor oil being given after the third dose. At the end of the course a large warm enema was given, followed by a hot bath. In many cases a course of pituitrin, beginning with 4-minim doses, was given at the end of the quinine routine. Out of the fifty-two cases there were six failures, although all of this series were thought to be at term. One patient had the course six times, two had it three times, and fifteen had it twice. One woman, a 4-para, had 180 gr. of quinine in nine days before the child—weighing 9 lb. 8 oz., and obviously overdue—was born. There is no doubt that quinine does increase the severity of the uterine contractions, which occur at about twenty-minute intervals from the twelfth week of pregnancy until labour commences. Increasing the severity of the contractions does not, however, cause labour. I have only once succeeded in inducing labour by quinine before term, and in that case the patient was estimated to be thirty-eight weeks pregnant. Induction of labour at about the thirty-eighth week, for a minor degree of contracted pelvis, is one of the most beneficent operations in surgery, as it benefits both the mother and the child. There is not an obstetrician living who would not prefer to induce labour by giving quinine rather than by operative means, however simple, and yet very few, if any, even attempt quinine induction before term. Let me give an account of the last case

I attempted to induce by this method. The patient—the wife of an American physician—had had a very bad time at her first confinement. Since then she had been examined and measured by a number of specialists in America, all of whom had assured her that she had a contracted pelvis and would have trouble at any future confinement. I expressed the opinion that there was no reason why she should not have another child, and that the confinement would be normal. She became pregnant and as pregnancy advanced I saw no reason to alter my opinion. I absolutely refused to induce labour by any operative means, but attempted quinine induction at the thirty-eighth week of pregnancy. I began with 40 gr. of quinine bihydrochloride in four equal doses at 3-hourly intervals, followed by 2 oz. of castor oil, an enema and a hot bath. The course was repeated the next day and followed by several injections of pituitrin, beginning with 4 minims and working up to 1 c.c. The course was repeated four times in about six days (the castor oil, however, only being given twice), and on the last day, through a mistake, the patient was given 40 gr. of quinine in three hours. The baby was born on the calculated date.

It is, then, my experience that, while quinine does increase the length and severity of the normal uterine contractions, it does not induce labour until the patient is at, or very close to, term. The facts that quinine induction is valueless to the obstetrician except at term, and that quinine is not used criminally with any success as an abortifacient, are of infinitely more value than the isolated and usually vague reports which have caused physicians to be over anxious in their treatment of malaria complicated by pregnancy.

There is no need for heroic and massive doses of quinine. Neither is there, as a rule, any justification for intramuscular quinine therapy. Ten grains of quinine in the morning and ten at night are sufficient for the treatment of the average woman, and such doses will not disturb the pregnancy.

It is usually believed that labour tends to light up latent malaria. This is probably true. It is equally true that an unsatisfactory morbidity rate during the puerperium may be conveniently ascribed to malaria when bad obstetrics is to blame. It is a common practice in tropical maternity hospitals to give quinine to all women for the first few days of their puerperium. This is probably sound practice. I, however, stopped the quinine when I went to Bangkok, and the morbidity rate did not rise but gradually became lower. The woman may have malarial parasites in her placenta and in her peripheral blood and yet not have a raised temperature. On the other hand she may have no parasites in her peripheral blood and yet suffer from malarial pyrexia. The temperature curves are frequently atypical and I have never come across a disease which so consistently refuses to obey the textbook rules as does malaria.

There is only one further question to be considered and that is whether quinine has any harmful effects on the fœtus. Dilling and Gemmell [5] collected a series of 765 patients in whom quinine was used to induce labour, and conclude that the drug may have been responsible for 8 stillbirths. They show that about 20% of the quinine injected is excreted by the kidneys, and that the maximum excretion usually occurs between the sixth and eighth hour after the drug is taken and continues for at least 36 hours. Occasionally, however, this excretion is delayed and the peak occurs 17-22 hours after the administration. It is suggested that this delayed excretion may be associated with a prolonged concentration of quinine in the maternal tissues which may prove toxic to the fœtus. They also confirm Porak's statement that quinine may be recovered from the child's urine, and claim to have found it in the liquor amnii. It is strange that they could not recover the drug from the tissues of a stillborn child or from the tissues of new-born rabbits, after the mothers had been treated with quinine. They also show, contrary to the statements of Porak and Runge, that children born as the result of quinine induction thrive as well as normal children.

In one of the 52 cases mentioned above, labour was induced because the fœtus was dead; in the others all the babies were born alive. Besides these cases of quinine induction, I always give quinine to all women in whom labour is induced by other means. I have also made a practice of giving quinine in all cases of uterine inertia not complicated by contracted pelvis. I cannot remember one fœtal death which could be attributed to the quinine.

It is just possible that the interval between the doses is important. I give the drug at three-hourly intervals, while most of the hospitals reported in the paper by Dilling and Gemmell gave it at hourly intervals.

I also treated a considerable number of pregnant women for malaria while in Bangkok. No abortion or premature labours were caused by the quinine.

SUMMARY.

(1) It is advisable that women proceeding to the tropics should be medically examined. This examination should invariably be carried out by one who has lived in the tropics, and preferably by a gynecologist. There are certain types of women who are unsuitable for the tropics.

(2) European women should wear a more mosquito-proof dress after sunset, unless they live in screened houses. This is a difficult subject. If only ladies in the highest position would set the fashion! In any case such a dress could be *de rigueur* for all Government servants.

(3) The ordinary mosquito net should be condemned. If one seeks protection from the mosquito, that protection should be absolute and can only be obtained if the net drops sufficiently far from the edge of the mattress to make it impossible for any part of the body to touch the net.

(4) Eastern tradition is bad for European men and much worse for European women. Late nights, excessive alcohol, insufficiently occupied minds and bodies and no permanent homes are serious evils. Prolonged separation from husbands and homes is unnecessary and causes complications, mental and physical. Many women attempt to live lives in the East which they could not stand in the West.

(5) Quinine taken prophylactically does not interfere with menstruation, conception or pregnancy.

(6) If a woman contracts malaria she should be energetically treated at once, whether she is pregnant or not. Massive doses of quinine are unnecessary.

(7) Malaria if left untreated will become difficult to eradicate, and may cause complications during labour and a poor milk supply during the puerperium. Moreover, there is evidence to suggest that malarial toxins may cause abortions, stillbirths and deaths during the first week of life.

(8) Quinine given in reasonable doses is extremely unlikely to cause abortions, miscarriages, or premature labours.

(9) There is very little evidence that quinine given to the mother has any deleterious effects on the child.

Conclusion.—The withholding of some preparation of quinine from pregnant women suffering from malaria results in unnecessary loss of life, and is inexcusable, as the drug is more likely to prevent than to cause miscarriage and death of the fœtus.

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Discussion.—Mr. LESLIE WILLIAMS said that he was in complete agreement with Dr. Theobald that quinine had little effect in producing abortion or premature labour. It was his own custom to use it—with success—at University College and Queen Charlotte's Hospitals for the induction of labour at or just before term. In cases of post-maturity, however, his experience had been unfortunate, in that several cases of fœtal death appeared to have

resulted from the quinine induction, and it was his habit nowadays to replace quinine induction in such cases by bougie induction. He would be interested to hear what had been Dr. Theobald's experience in cases of quinine induction for cases which had definitely gone beyond term.

Sir ANDREW BALFOUR said there were types of men as well as of women who were unsuitable for life in the tropics. No one with an unstable nervous system should go there, and it must be remembered that women, as a rule, were more highly strung than men. Speaking generally, tropical climates and conditions of life were to some extent deleterious to the nervous systems of Europeans.

He was a little dubious about an efficient mosquito-proof dress for women's evening wear in the tropics. The wearing of two pairs of stockings, one over the other, might be a deterrent to mosquitos. It was the custom to fix electric lights under the dining-table in the evening to drive away these insects. With regard to screened houses, he was in favour of screening portions of verandahs rather than the whole house.

Dr. F. PARKES WEBER said that in regard to the danger of abortion from the therapeutic use of quinine, still more decided information could easily be obtained by ascertaining from general hospitals how many pregnant women had been admitted during the past ten years for grave symptoms of quinine poisoning, due to their having taken large doses of quinine as a supposed abortifacient—and in how many (if any) of these patients the pregnancy had been terminated by the quinine. A few years ago a woman, aged 31 years, was admitted to hospital under his care with blindness—fortunately only temporary—from having taken quinine to produce abortion, but the pregnancy was not affected, and probably that case was no exception.

Dr. P. MANSON-BAHR said that he would like to see this paper circulated amongst practitioners in the tropics and ships' surgeons. There was an unaccountable prejudice against the exhibition of quinine in pregnancy, and he was convinced that in the majority of instances it was the malaria, not the quinine, that caused the abortion. He had seen two very sad deaths in pregnant women within recent years, through the prohibition of quinine, both overseas and during the voyage home. There were exceptional people, especially women, who had an idiosyncrasy to quinine. In these cases plasmoquine compound was very well borne, and he had several patients with numerous parasites in their blood in whom plasmoquine compound had apparently exterminated the parasite, and the women went to full term without further attacks.

Dr. G. CARMICHAEL LOW: I have had several similar experiences to those of Dr. Manson-Bahr, when pregnant women have been warned not to take quinine and have succumbed to malaria in consequence. The point brought forward by Dr. Theobald, that quinine does not act upon the uterus until labour is established, cannot be too widely known, and if this is borne in mind, one can use the drug safely for pregnant women suffering from malaria. As a matter of fact I have always done so, not using too large doses, e.g., not over ten grains at a single dose.

Women going to the tropics ought certainly to be examined as carefully as men. It is hardly necessary that a gynæcologist should examine unmarried women, as the ordinary physician can inquire into any history of menstrual disorders and other abnormalities. I have for many years now examined for a missionary society which sends out large numbers of both sexes to Africa, and I have become more and more strict as to the type I send out. This has improved the general health rate of the mission very much. The fact, however, remains, that women are not so well in the equatorial tropics as men are, even though they dress judiciously and do not take alcohol. Apart from disease, the tropical climate *per se* has a deleterious effect on the white race.

Sir WILLIAM PROUT said that with regard to a special mosquito-proof dress for women in the tropics, such matters must be brought within the region of what was practical and likely to be carried out, and he was sceptical as to whether a special form of dress which would be efficient against mosquitoes would be adopted.

He welcomed Dr. Theobald's pronouncement in favour of prophylactic quinine. The greater his (the speaker's) experience—and it was one which now stretched back for many years—the more fully convinced he was of the benefit to health in the intensely malarious

parts of the tropics from the habitual taking of quinine. He did not maintain that it prevented infection, but he believed that those who took quinine regularly stood a malarious climate better than those who did not.

He did not entirely agree with Dr. Theobald as to the effect of quinine on the uterus. In some cases it did, in his experience, undoubtedly affect menstruation prejudicially. He recalled the case of one woman who definitely had a small show of blood when she took about ten grains of quinine. At the same time he deprecated too much attention being paid to quinine idiosyncrasy, which he thought was greatly exaggerated. It was often a question of two evils, of giving quinine with the risk of bringing on labour, or of letting the patient suffer seriously from the malarial infection. He thought that the administration of considerable doses of bromide at the same time, while not interfering with the parasitocidal action of quinine, effected a sedative influence on the uterine muscle.

War Section.

[April 14, 1930.]

Recruiting: A Review of Modern Requirements.

By L. M. MORRIS, O.B.E. (Surgeon Captain, R.N.).

ALTHOUGH numerically the Services are becoming smaller, our methods of training and of fighting are rapidly becoming more scientific and more mechanical, and therefore demand more highly trained individuals capable of assimilating detailed technical knowledge in the early years of their service in order to fit them for advancement and, later on, for the command and instruction of others. Whether from economical reasons, or because we are using more mechanical and scientific methods of warfare, we must endeavour to make a corresponding increase in the intellectual standard of our recruits, and must revise our methods of recruiting accordingly. An efficient recruiting service is now more than ever necessary in order to prevent the entry of youths physically, mentally or temperamentally unfit for up-to-date requirements, who would possibly have to be discharged invalided after a short time of expensive upkeep and training.

We require an active and intelligent youth who joins of his own free will and who is enthusiastic over his career and its prospects. Before the European war, when examining recruits, we paid attention mainly to physical fitness and were governed by certain standards of weight, height and chest measurements. These standards are very necessary as a general guide to physical fitness, but in the future we must pay equal attention to the mental and intellectual standards. These requirements can be summed up as: self-reliance, cheerfulness, initiative, intellectual ability, normal mentality with a reserve of mental balance and stability. We must eliminate all those who are on the danger-zone of mental instability and suffer from neurosis, timidity, hysteria, phobias, or any other form of temperamental abnormality. Many of these abnormalities exist to-day, and are the product of modern methods of living and environment. Their subjects, as a class, are most unsuitable for a disciplined life, in which it is necessary to suppress individual idiosyncrasies and conform to the manners of others.

Such conditions and horrors as those experienced during the late war might be intensified in any future war, and would necessitate reserve of mental normality both in the individual and in the mass. Recruiting must therefore be made more "selective," and I will bring before your notice some measures directed towards the attainment of this end.

A good physique does not necessarily mean a correspondingly good mentality; in war and in emergency some of the poorer types, physically, become "giants" when it is a question of morale or a test of endurance under physical and mental strain. We must, then, ensure the entry only of those who combine the necessary physical fitness and ability to remain fit under all the conditions of service, with an equal degree of mental and temperamental stability. The Service training is intended to produce the above type—and does so with marked success; but it is the duty of the recruiting medical officers to eliminate candidates unsuitable for such training.

The standards of physical fitness required for entry, together with the causes for the rejection of candidates, are all carefully detailed for the guidance of the medical officers employed on this duty. The present condition of the candidates can be assessed with fair certainty according to the experience and ability of the medical officer at the first examination, and I will suggest how this examination may be

carried out in a more detailed manner when the recruits are finally examined at the depot. At present we make no systematic provision for a careful inquiry into the past medical history or family history of our recruits, but this investigation is of the utmost importance in determining the mental aspect of their suitability. The parents are the only source of the information which we need regarding the past history and family history, but we require the youth to sign a form stating that to the best of his belief he has never suffered from fits, incontinence of urine, discharge from the ears, or any other disease likely to render him unfit for His Majesty's Service. It is natural that if he is anxious to join the Service he will withhold any information that might cause his rejection, even if he understands what is required in the questions put to him; he can avoid all leading questions and falsify his answers. We know of numerous instances of this kind, and we can recall many cases in which a man who has been invalided from one Service has, by false attestation, joined another, and has eventually been invalided again. We have no power to prevent this practice if we only rely on the man's own statement as to his previous health and movements. I will quote two instances which occurred quite recently at the Royal Naval Hospital, Plymouth. The first is a boy in the Navy, who was certified as insane and invalided to a mental institution, from which he was discharged after six months' treatment, whereupon he at once joined the Army and was again invalided after one month's service. The second case is that of a Royal Air Force rating, who was invalided on account of nervous derangement, and then joined the Navy as a cook's mate. After two years' service he was certified as insane, as he was suffering from delusional mania, said by his mother to be attributable to the Service.

The past history is too often only revealed by events after entry, which would most certainly have caused rejection had they been known at the entrance examination. In order that the family and past history of recruits may be more systematically examined, I recommend that a recruiting form be drawn up, to be signed by the parent, guardian, or some responsible person, and filled in with reliable information on these important points. The form would be produced at the first and other medical examinations, and it could be used in common by all three Services. This procedure would place the responsibility on the parents, and would certainly be a more reliable method of safeguarding the interests and health of the Services. The inquiry into the family history is of importance chiefly as regards pulmonary tuberculosis, and questions should be asked regarding consumption in the family. Other questions should deal with mental disease such as might be caused by chronic alcoholism and the sequela of syphilis.

Definite answers should be required with regard to past illnesses such as bronchitis, pleurisy, rheumatic fever, disease of the ears, fits, incontinence of urine, and to past mental condition and temperament. Details of any serious infectious disease or meningitis, and of injuries, if any, should be obtained. We already obtain written reports as to education and character; the addition of a written report regarding the previous medical history would be an additional insurance against the entry of undesirables. Heredity should be carefully considered, as it has a definite relation to temperament.

The final test of successful recruiting is that of the recruit's ability to remain physically and mentally fit under all conditions of training and foreign service. This can only be determined after he has been finally entered. Many defects—some physical, some temperamental, may become apparent under the changed conditions of his Service life and training. Not all recruits are adaptable to these conditions, and some may develop defects which could not be foreseen at the time of entry. I suggest a probationary period of six months in order to test the general efficiency of the recruit. Should any physical or mental defect become apparent during this period, then he should be discharged as unlikely to become an efficient unit. This

procedure is already in operation in the Army. On Army Form B. 204 a recruit can be certified as physically unfit if under six months' service, and can be discharged home from his depot by the commanding officer. A similar procedure would be of benefit if introduced into the Naval Service. By the introduction of a six months' probationary period, early discharge could be effected in cases showing temperamental unsuitability, hysterical or neurotic manifestations, fits, epilepsy, incontinence of urine, cardiac intolerance to exercise, or other causes. During the first six months there is ample opportunity for detailed examination of the heart, eyes and ears, and of any defects which might lead to discharge as unfit. In many instances it is advisable to discharge recently entered recruits who have proved unsuitable for modern requirements, and it would be an advantage and economy to be able to discharge them without the delay of waiting for a board of survey.

The importance of the organization of the system of recruiting cannot be too strongly emphasized. It is our first line defence in preventive medicine and economy, and should always be regarded as one of the most important duties of medical officers. The final medical examination of recruits can only be satisfactorily undertaken by officers with wide experience and knowledge of Service requirements. It can only be carried out at one of the main depots by trained officers on the active list, who should have facilities for reference to specialists in medicine, and in dental, aural and ophthalmic work. Team work is required in settling some questions in recruiting; it is often impossible for one officer to state that any one recruit is in all respects fit for the Service.

The final examinations should be concentrated to the three main Naval and Royal Marine depots and to the training establishments. The present recruiting areas are too widely distributed for efficient central control of the final examinations. It is necessary, from economical reasons, to maintain recruiting centres throughout the main industrial and sea-port areas, but I strongly urge that all the medical examinations in these areas should in future be considered as only provisional and preliminary to the final examination, which should be held when the provisionally passed recruit arrives at one of the main depots or training establishments. The proposed preliminary examinations would, therefore, be carried out in certain areas by retired Service officers and in others by civil practitioners. Having been passed as provisionally fit, the recruit is then forwarded to the nearest Naval depot, R.M. Division, or training establishment, where he is again examined; this time for final entry. This final examination would be carried out by one or more senior officers on the active list, and in close touch with officers in the specialist branches, as regards any doubtful pulmonary, cardiac, eye or ear conditions. The examinations should include observations and tests of the nervous system, e.g., reflexes, speech (tremor or hesitancy) and the mental and intellectual state. The expression must be alert and free from any sign of dullness or apathy; answers to questions give a ready indication of the intellectual standard. The form containing details of past illnesses could then be consulted and further questions asked on any doubtful point. Owing to the reduction in the numbers of recruits required we can readily introduce a system of recruiting by selection, and maintain a high standard of health and efficiency by the introduction of a stricter medical examination for entry. This examination has sometimes been carried out in a perfunctory manner, and by those with little knowledge of Service requirements.

The decision as to fitness for service is sometimes difficult and sometimes merely a matter of opinion; it requires special training and a wide experience in those officers employed on this duty at the depots, and the examination for final entry should never be relegated to junior or recently joined officers or to doctors not in the Service. The careful supervision of all recruits for at least six months is necessary, as I have said before, in order to determine their adaptability and physical and mental suitability for the life chosen. Those who are not amenable to discipline

and in whom signs of neurosis and mental instability develop must be discharged as undesirable. The Services require a normal and healthy mind as well as a healthy body.

Discussion.—Wing-Commander J. N. MACDONALD: The final examination of a recruit for the Royal Air Force is carried out at the London Recruiting Depot, those recruits who live outside the London area receiving a preliminary medical examination by the nearest civilian medical practitioner employed on recruiting work by the Force. All these medical examiners have full information and instruction as regards the standards required. On the whole, this system works very well.

A medical questionnaire is completed by each recruit at the time of his medical examination in London. This consists of a series of questions, phrased as clearly and simply as possible, dealing with the candidate's personal and family medical history. Not infrequently, by this means I obtain valuable information bearing on the final assessment of the recruit. It is, however, necessary to go fully into details when admissions are made on this form, as owing to lack of knowledge in replying to these questions candidates occasionally make mistakes. I agree with Surgeon Captain Morris as to the importance to the examining medical officer of the availability of information as regards a man's past medical history when he has previously served in His Majesty's Forces.

One of the problems which is much to the fore at present is the question of whether the sclerosing treatment for varicose veins is as permanent in its cure as those of operation. The immediate apparent results seem to be quite as good.

A decision with regard to minor flat-foot cases is at times somewhat difficult to arrive at. It has been pointed out to me that men with muscular flat-foot, or, as we might term it, "fat" flat-foot, are less liable to break down than those with "thin flat-foot" due to absence of muscular tissue.

Albuminuria is frequently found in men reporting for examination after a long and tiring journey. These cases are deferred for twenty-four hours, when, on re-examination, the albuminuria is usually found to have cleared up.

Surgeon Commander KENNY said that in dealing with the intellectual capacity of recruits, the material available should be considered. Considering the fact that the great majority of the adult civil population were fitted only for manual labour, it was a difficult problem to raise a recruit who combined physical and intellectual capabilities above the average.

He agreed with Surgeon Captain Morris on the question of the concentration of recruiting and favoured the six months' probation period, but thought that such a scheme would add considerably to the expense of the recruiting service. He suggested that for the London area, advantage should be taken of co-operation with the R.A.M.C. staff of the Millbank Hospital, and that doubtful cases might, by arrangement, be examined by the specialists there before their final entry into the Navy.

An arrangement already existed with the Golden Square Ear Hospital for this class of case and it had proved satisfactory.

